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RESEARCHES IN PARENT EDUCATION IV

by

Ralph H Ojemann, Ph D

Vera H Brandon, Ph D

Eva I Grant

Ruth Musgrove

Anne Gabriel

Louise C Coast

George D Stoddard, Ph D , Editor

University of Iowa Studies

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Ralph H Ojemann

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PART ONE

A REVISED METHOD FOR THE MEASURE- MENT OF ATTITUDE

by

Ralph H. Ojemann, Ph.D.

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A REVISED METHOD FOR THE MEASUREMENT OF ATTITUDE

In the research program of which this study forms a part, it is assumed that a given behavior act may be considered as being the product of several inter-acting factors such as the fundamental desires of the individual (i.e., his equipment for carrying out desire, knowledge at the moment, attitude, emotional control) and the possibilities and limitations of the environment in which the act occurs. Thus attitude is looked upon as one factor but not the only factor underlying and determining the behavior of the moment. To understand and control behavior a method of relatively precise observation, that is, a method of measurement, must be available for all factors. Without such a method it does not appear possible to delineate the structure of the behavior act. It is in the light of the ultimate goal of understanding the structure of the behavior act that attitude measurement is considered here.

A CRITIQUE OF THE THURSTONE METHOD

Probably one of the best known methods for the measurement of attitude is that devised by Thurstone (8). Thurstone's procedure consists in adapting a well-known psychophysical principle to the scaling of simple statements expressing degrees of favorableness and unfavorableness toward the psychological object. Theoretically, it thus becomes possible to express attitudes in steps that are approximately equal psychologically and that extend over the range from extreme favorability to extreme unfavorability.

There are several difficulties inherent in this type of scale. These become especially apparent when attempts are made to use the scales in learning studies. But they are also observable when only a survey of attitude is attempted. The difficulties are of two general types: (1) variations in the meaning of the "key-concepts" are not recognized, and (2) checking simple statements permits a maximum of verbalizing.

The failure to recognize variations in the meaning of the "key-concept" may be illustrated by reference to almost any one of the better known scales. For example, in the scale for measuring attitude toward the church, the terms "church" and "religion" appear as "key-concepts"

as indicated by the following statements taken at random from the scale

- "I think the church is a parasite on society "
- "I think the church is too superficial to have much social significance "
- "I think church membership is almost essential to live life at its best "

Whether a person agrees or disagrees with such statements may depend upon the type of church he has in mind. Churches, as other social units, may vary from extreme right to extreme left. An individual may feel that one type of church is a parasite on society while another type is not. He may think that one type of church is too superficial to have much social significance while another may not be so superficial.

The effect of varying the meaning of the key-concept is indicated by some data obtained in the investigation by Gabriel (5) which will be reported in detail later in this monograph. In this investigation the attitudes of parents toward various activities of adolescents were the objects of study. One of the activities selected was that of dancing. Instead of using an attitude scale of the simple statement type consisting of such items as "I think dancing is a very wholesome form of activity," or "I think dancing is harmful," several situations were constructed describing various types of dancing such as dancing at home with one's acquaintances, dancing in the school gymnasium in which respectable adults participate, dancing in an unsupervised public hall, and the like. For each situation, a list of reactions expressive of varying degrees of favorableness and unfavorableness was prepared and scaled in the usual way. The items having a satisfactorily low Q-value were retained in the scale. In administering the test the subject was asked to indicate for each situation all of the reactions he approved.

A portion of the data obtained in this study is represented graphically in Figure 1. These data show the attitude scores of a group of eighty-nine adults in two types of dancing situations. The first is a dance with friends at the neighborhood club room supervised by one of the parents. The second is a dance at a country roadhouse which is relatively unsupervised. It is seen that varying the situation redefines the attitude of the group.

Similar results were obtained for other attitudes studied. For most subjects, especially those who have developed some discriminations, the attitude is not the same for all forms or fractions of the "key object" or "situation." The attitude may vary with the definition given the key-concept.

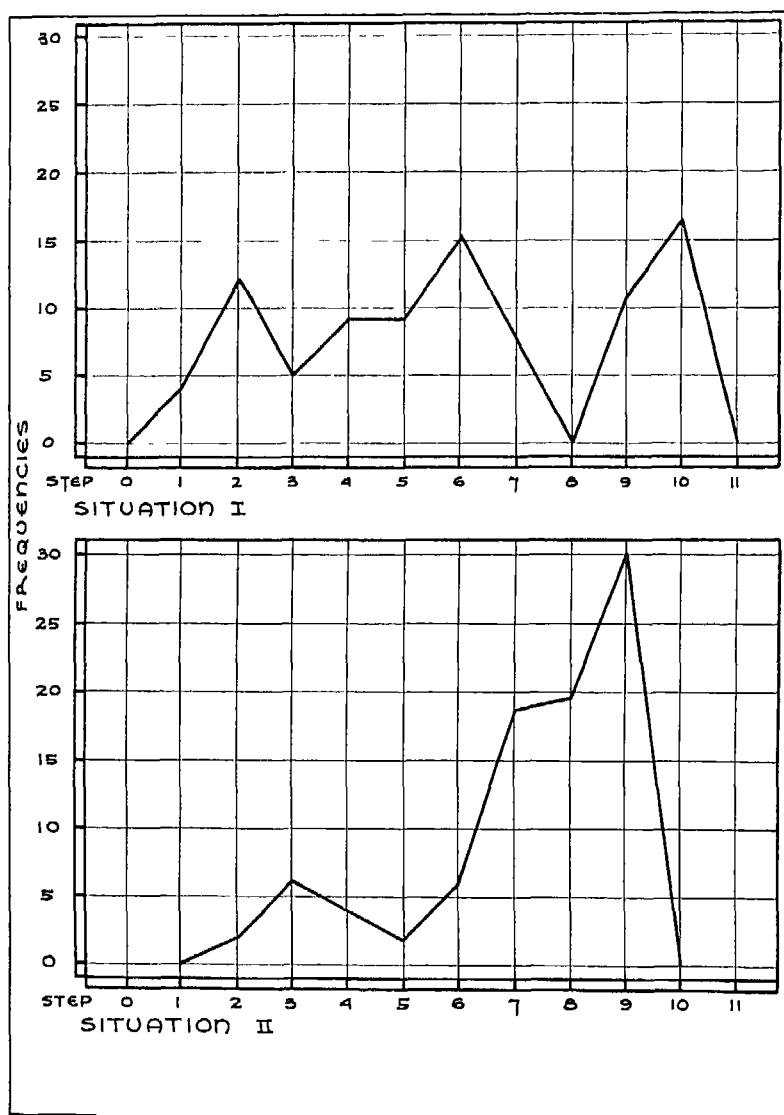


Figure 1 Attitude Toward Dancing, Situations I and II

Perhaps more important than the variation in the meaning of the key-concept is the fact that items of the simple statement type admit a maximum of verbalism, that is, the subject can change his

response through a sheer verbal transfer. The question here is not altogether or even in large part a question of the relation of the individual's attitude as evidence in all forms of language behavior, and the score on the scale. Although this may enter, the question is rather one of making a verbal transfer without a corresponding transfer in meaning. An example will make this clear.

In measuring the attitude of parents and teachers toward making the child self-dependent or self-reliant, it was necessary to determine to what extent they favored that type of development which encourages the child early to become independent of the parent at an early age. A group of eighty adults was asked to check a series of statements relating to self-reliance and to write a paragraph on what they thought about encouraging self-reliance. The results were rather striking. Practically the entire group expressed in both exercises a very favorable attitude toward self-reliance. It happened that extended observations of the practices of this group of parents were available. These practices indicated that a fairly large proportion fundamentally did not favor "a loosening of the apron strings." These subjects seemed more interested in keeping children dependent. Why the disjunction?

An analysis of a few cases indicated that most of these subjects had read or heard that self-reliance was something to be encouraged. They had adopted the slogan without inquiring as to its meaning. Thus it was possible for them to profess verbally a very favorable attitude while keeping the child dependent fundamentally. They were not insincere or unco-operative. On the other hand they gave every evidence of being sincere. They were not knowingly and purposefully saying one thing and doing another. They had merely made a shift in words. They had taken their cue on the verbal plane without examining the meaning of self-reliance and integrating the true meaning into their behavior.

It is not difficult to see that this consideration is of especial importance in a learning situation when it is desired to measure the effect of a learning program. If the subject can make a verbal transfer in meaning then it is clear that the verbal responses may show a change without a fundamental change in behavior, including other forms of language behavior. The problem is, how can the possibility of sheer verbal transfer be minimized?

A METHOD FOR THE MEASUREMENT OF ATTITUDE 11

A REVISED METHOD WITH ILLUSTRATIONS

In the revised method an attempt has been made to incorporate a clear definition of the key-concept (that is to make it possible to relate the score obtained to the meaning the subject gives to the situation) and to reduce to a minimum the possibility of verbal transfer. At the same time an attempt was made to retain the advantages of a psychophysical gradation. All three requirements are important. The last requirement, that of scaling, must not be overlooked, especially in learning studies. If the units on the scale are not approximately equal, it is not possible logically to make a comparison of gains at different points on the scale. Since studies in the modifiability of attitudes are of considerable interest, it would seem most helpful if the scaling requirement could be met.

To illustrate the method, several types of items that have been used in various scales will be described and in each case the following questions will be considered: (1) has the key-concept been defined, (2) is the possibility of verbal transfer reduced, (3) can the material be scaled?

All of the items have one characteristic in common. They require a more deeply integrated performance than that taking place on a sheer verbal plane. Instead of checking simple statements, the subject is asked to draw comparisons, to summarize data, or to describe his procedure in common situations. These performances are carried out under standard conditions and the procedure is then examined to determine the degree of favorableness or unfavorableness toward the psychological object revealed.

One of the early scales constructed by the revised method is that for measuring attitude toward self-reliance, Ojemann (7). The subject is presented with a list of activities in which all children engage, such as feeding themselves, lacing shoes, hanging up wraps, purchasing simple articles, etc. The subject is asked to estimate at what age he would expect a child of a given description to perform such activities. Examples of items from this test are

I think a child (of a given description) should be able to carry food with a spoon from a dish to the mouth practically without spilling throughout an entire meal by the age of _____

I think a child should be taught to manage an expenditure of an allowance which includes money for a few articles of clothing such as handkerchiefs by the age of _____

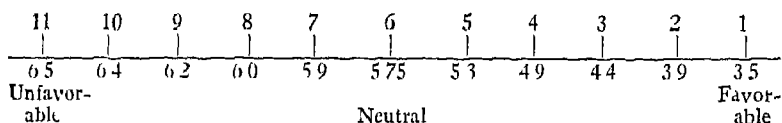
It seems to me that a child should be able to unbutton one-half inch buttons on the front of his suit when he has reached about the age of

In developing a scoring key for each item, the judges were asked to indicate the type of response they considered very favorable (that is, so favorable that in their opinion it could receive a rating of 1 on an 11-point scale), the response they considered neutral, and the response they considered very unfavorable. Judgments for each of the three positions were plotted and the midpoint selected to locate the extremes and the midpoint of the scale. The differences between the midpoint and the extremes are equally distributed over the corresponding section of the scale. A total of eleven steps was used. The Q-values of the neutral responses were determined and only items included in which the Q-value of the response was two or less. The fact that some twenty-five or thirty items on each of the three scales designed for the preschool, elementary, and adolescent age levels respectively were developed indicate that it may be possible to devise items of this type in which the ambiguity of interpretation of the responses is at a minimum.

The scoring may be illustrated by an example. In the scale for measuring attitude of adults toward self-reliance in children of preschool age the following item appears

I think a child should be able to put his shoes on the correct foot, lace and tie them without help, by the age of

The scoring key for this item is as follows



If the subject responded with "six" he would receive a score slightly to the unfavorable side of the neutral point. If he responded with "four" he would receive a score of 2 which is interpreted as an extremely favorable attitude.

Does this type of item require a more deeply integrated performance? Each item requires the subject to make an estimate. The subject is doing something more than reproducing a word or phrase. Furthermore, since the items are more or less discreet it would require a phenomenal memory on the part of the subject to reproduce his original score on a retest through sheer recall.

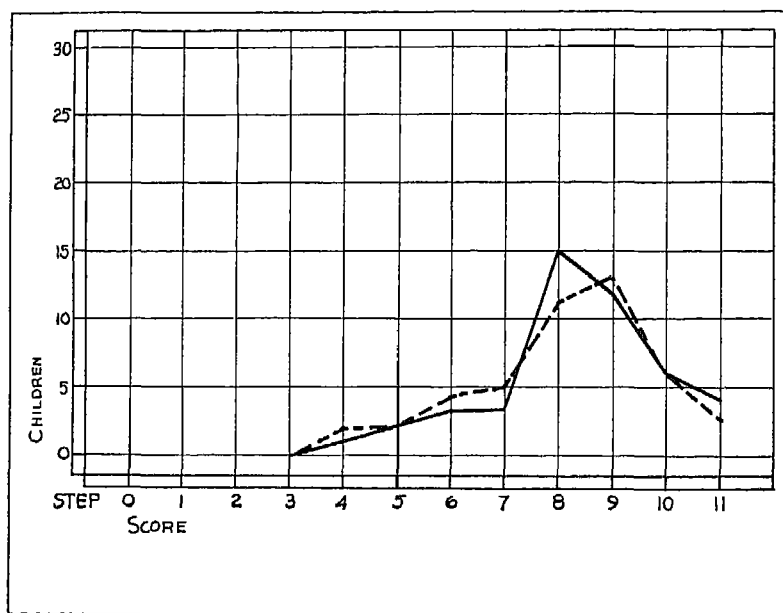


Figure 2 Distribution of Scores of High School Students in a Learning Experiment (Butler)

Are the scores reliable? This has been tested several times with different groups and it does not appear difficult to obtain retest and chance-half reliability scores varying from .80 to .90 (Ackerley (2), Butler (4), Brandon (3)). The distribution of scores on the original test is also reasonably well duplicated on retesting. In Figure 2 the distribution of scores of high school students who served as a control group in a learning experiment in a study by Butler (4) is shown for the initial test and for the retest. The interval on retesting was approximately four weeks. An inspection of the graphs indicates that the two distributions are highly similar. These data indicate that the performance measured by this test is reasonably stable and can be studied.

Beyond the requirement of obtaining a more deeply integrated performance that is reliable, there is the question of the validity of the score. How do the scores correlate with the subject's attitude as evidenced in his behavior? A study by Ackerley (2) contributes data on this point. The attitudes of a group of parents were measured by the self-reliance scale. Within ten days two observers visited the homes

at different times and obtained by interview and observation a description of the parents' practices with their children. The two observers expressed independently the results of their observation by indicating the point on the attitude scale which in their estimation best represented the attitude of the parent.

Subject	Deviations in Scale Steps	
	Two Ob- servers	Observer and Scale
1	0	8
2	8	13
3	7	19
4	11	19
5	8	8
6	8	17
7	7	28
8	13	3
9	7	9
10	6	1
11	4	6
12	9	8
13	8	13
14	6	9
15	6	12
16	7	8
17	6	7
40		3
Mean	7	9

The data in the second column indicate that the two observers agreed fairly well. In one or two cases the deviations are rather large but for the most part there is fair agreement. In other words, we have two independent measures of the parents' attitude as evidenced in practices that agree fairly well. Data in the last column indicate that the results of the observations also agreed fairly well with the scores obtained on the attitude test. In most cases the differences are small. By sheer chance, the differences in general and in large groups would average 6 scale steps. The measure of attitude thus appears to correlate rather high with data from observations.

Before leaving the self-reliance scale, it may be interesting to note the type of results obtained when measurements are made of untrained groups of adults. Figure 3 and the following tabulation show the scores of a group of parents of preschool age children and a group of parents of elementary school-age children.

A METHOD FOR THE MEASUREMENT OF ATTITUDE 15

Score	Preschool Number	Score	Elementary School Number
1	0	1	0
2	1	2	1
3	5	3	1
4	9	4	5
5	14	5	7
6	24	6	23
7	25	7	30
8	20	8	12
9	13	9	9
10	8	10	1
11	0	11	0
Total	119	Total	89

The subjects were for the most part parents in a mid-western city of 15,000. The charts clearly show that the attitude of the majority of each group is unfavorable toward the development of self-reliance. Similar results have been obtained in other studies of adult groups such as in the study by Hedrick (6). These data tend to confirm the common observation that on the whole and in general parents are more favorable toward keeping children dependent than in encouraging self-reliance. That this attitude is readily modifiable is shown by the data

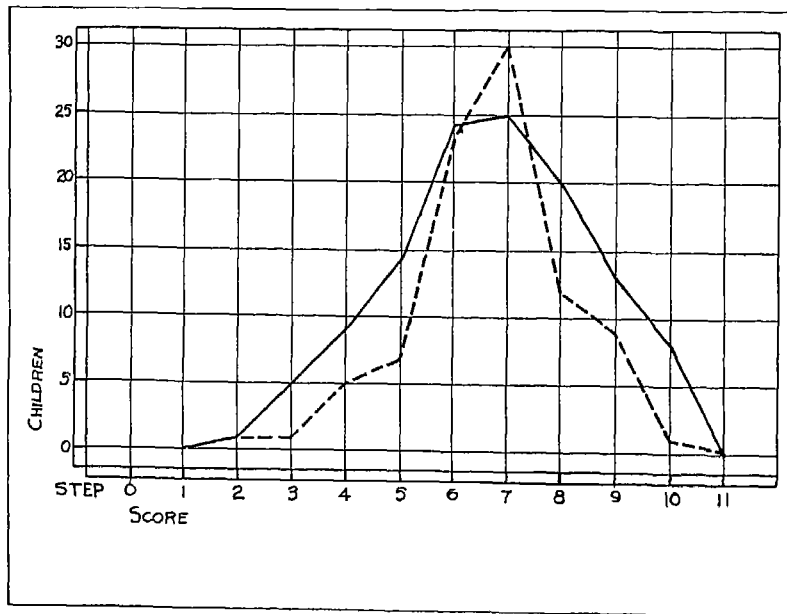


Figure 3 Scores of a Group of Parents of Preschool Age Children and a Group of Parents of Elementary School Children on the Self-Reliance Scale.

of Butler (4) for the high school level, by Brandon (3) for the college level, and by Hedrick (6) for the adult level

Another type of item requiring a more deeply integrated performance is illustrated by the material used in the measurement of attitude toward scientific procedure. In one part of the test the subject is given a group of statements expressing a relationship between two concepts and he is asked to estimate the truth or falsity of the statement. It is also suggested to him that if he does not know the relationship he should indicate the source to which he would go to find it. He is warned that he is to describe the source in some detail. For example, instead of saying he would consult some reference work he is asked to tell specifically what reference or specifically the qualification of the reference. If he would go to some individual, he is asked to tell to whom and what the qualifications of the individual are. The statements were drawn from many fields of knowledge as indicated by samples chosen at random.

"Some day it will be possible to make gold from lead"

"A square box looks higher than it is wide"

"A high forehead is a sign of superior intelligence"

"Famous men are usually born of poor parents"

"If the air were always as full of moisture as it could be a wet cloth would never dry out"

Here again, the subject is asked to make estimates. Since the items are relatively discreet and since twenty-five are used, the subject would have to have a phenomenal memory to reproduce his answers on subsequent performances.

The last item to be described is also illustrated from another part of the scientific attitude test. In this case the subject is asked to describe his procedure in such everyday situations as purchasing common articles such as shoes, fountain pens, toothpaste, and the like. He is given a list from which he chooses four. He is warned that he is not to tell when he decided he needed new shoes, etc., but rather to tell only about selecting the particular kind he finally bought. It is also suggested to him that if he used any special information he should indicate what that information was.

In developing a scoring key, a variety of descriptions were obtained, and these were scaled by a group of judges. As might be expected, descriptions involving the recognition of the importance or the use of data from critical studies as to relative merits of different brands, such

A METHOD FOR THE MEASUREMENT OF ATTITUDE 17

as data from government bulletins or research organizations, were given a high score while those responses failing to show such recognition were considered by the judges as being rather unscientific. Can such responses be made sufficiently clear to reduce the ambiguity? The data presented below giving the range in scale-values and Q-values for eleven different responses (the number comprising the scale at present), as judged by forty-six judges indicate that the Q-values are not, with a few exceptions, excessively high.

Section	Range in Scale Values	Distribution	
		Q-Value	Number
Description of procedure in purchasing (Ap- plies to each of 4 items)	2 to 10	15	3
		20	3
		25	2
		30	1
		35	0
		40	2

In this type of item it is again exceedingly difficult for the subject to distort the description of his procedure in such a way as to secure a favorable attitude score since he is asked to indicate in some detail the data or tests, if any, that he has used. It is relatively difficult for him to shift through sheer verbalizing.

SUMMARY

In this paper two major deficiencies in the attitude scales of the type contributed by the Thurstone procedure are described. Such scales do not (1) take into consideration variations in the meaning of the "key-concept" and (2) permit through the use of simple statements a maximum of verbalizing. These difficulties are especially apparent when an attempt is made to use the scales in learning studies. Data are presented to show that variations in the meaning of the key-concept will alter the subject's attitude scores and that the checking of simple statements may admit a maximum of verbalizing.

A revised method of scaling construction is described in which the aim is to overcome these difficulties. A major characteristic of the revised method is the attempt to tap more deeply integrated performances and at the same time to secure a product that can be scaled. Illustrations are drawn from the writer's scale for measuring attitude toward self-reliance and the scale for measuring attitude toward scientific procedures.

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PART TWO

A STUDY OF THE ATTITUDES OF COLLEGE STUDENTS IN SELECTED PHASES OF CHILD DEVELOPMENT

by

Vera H. Brandon, Ph.D.

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of Doctor of Philosophy, in the Department of Child Welfare, in the
Graduate College of the State University of Iowa

June, 1936

A STUDY OF THE ATTITUDES OF COLLEGE STUDENTS IN SELECTED PHASES OF CHILD DEVELOPMENT

THE PROBLEM

Colleges and universities are increasingly recognizing the importance of the intelligent behavior of their graduates towards children. The work of teachers, social workers, parents, and citizens involves and affects children. This recognition has given rise to courses in child development. A review of the literature shows, however, a lack of definite data concerning the status of college students' needs in this field. It is also apparent that little is known concerning the results of child development teaching programs as they are now being carried out at the college level.

From numerous investigations and observations, it appears that there are several factors underlying or determining behavior. In addition to the possibilities and limitations inherent in the environment, there are the factors of knowledge, attitude, emotional stability, desire, and probably others. Applied to behavior towards children, the factors include knowledge about child development, attitudes toward children, fundamental satisfactions derived in the process of guiding children, etc. To design effective learning programs, we need a knowledge of the needs of the learner and a knowledge of the effectiveness of learning programs.

This study falls in the general area of attitude. Its purpose is to throw light on the needs of college students as they relate to selected attitudes and to determine the effectiveness of a carefully designed learning program in modifying attitudes at the college level.

This study includes three major problems. The general plan of attack is as follows:

- 1 The first step was the construction of seven attitude scales for the measurement of specific attitudes. These scales are centered around a specific attitude toward each of the following: self-expression, corporal punishment as a means of control, praise as a means of control, adoption of children, preschool education, supervision of a preschool child's money allowance, and medical examinations.

- 2 The second part of the study involves the measurement of the attitudes of a large sample of college students, both men and women, the sample being selected at random from various schools and departments in several colleges and universities. The scales used in measuring student attitude include those con-

constructed by the writer and also two additional scales. One on self-reliance, constructed by Ojemann (5), and the other scale on the use of fear as a means of control, constructed by Ackerley (1). This section of the study also contains an analysis of the variation in the attitudes of college students with such factors as intelligence, sex, and college classification.

3 The third part of this study is essentially experimental in nature. The purpose is that of measuring the effectiveness of a carefully planned learning program in modifying student attitude toward self-expression, self-reliance, corporal punishment as a means of control, fear as a means of control, and praise as a means of control. The experimental procedure involves an initial measurement of both knowledge and attitude possessed by college students in experimental and control groups, the administration (to the experimental group) of a carefully planned learning program, a remeasurement of knowledge and attitudes possessed by both groups, and a determination of changes brought about in both groups. The data permit an analysis of the relation of changes in knowledge to changes in attitude and the relation of intelligence level to changes in attitude.

Remeasurements were made two years after the final measurement at the close of the learning program. These data are analyzed to throw light on the permanency of attitude changes.

CONSTRUCTION OF ATTITUDE SCALES

A technique well-known in psychophysics was applied by Thurstone and Chave (10) to the construction of attitude scales. One of the major difficulties of the Thurstone application is that differences in meaning assigned by various subjects to the key-concepts are not taken into account. For example, in Thurstone's scale for measuring attitude toward the church, the terms "church" or "church membership" appear as "key-concepts" as illustrated in the following typical statements:

"I think the church is altogether too superficial to have much social significance."

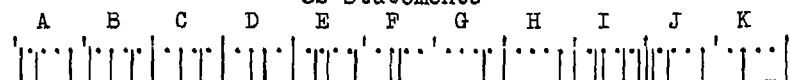
"I believe church membership is almost essential to living life at its best."

Whether one agrees or disagrees with such statements depends upon the kind of church one has in mind. One may feel that one type of church is beneficial while another type is not.

Two methods were used in the present study to overcome this difficulty. One is to define the "key-concept" and ask the subjects to use this definition in their reactions to the instruments. Another is to present a situation involving the attitude in question in brief narrative form, list several reactions, and ask the subject to check those with which he agrees. Both methods were used in this study. The definition of key-concepts will be given later (p. 25-26).

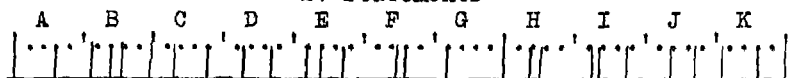
Attitude Toward the Use of Corporal Punishment
as a Means of Control

32 Statements



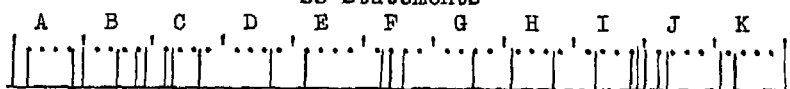
Attitude Toward Supervising a Preschool
Child's Money Allowance

27 Statements



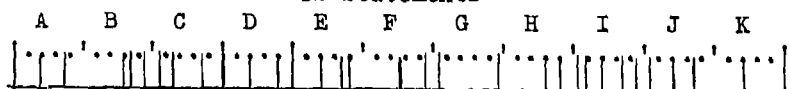
Attitude Toward Medical Examinations

28 Statements



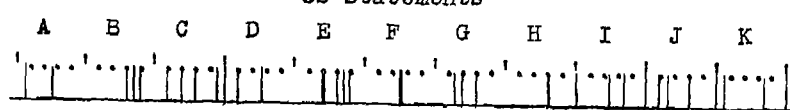
Attitude Toward the Use of Praise as a Means of Control

32 Statements



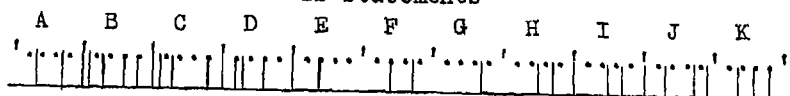
Attitude Toward Preschool Education

32 Statements



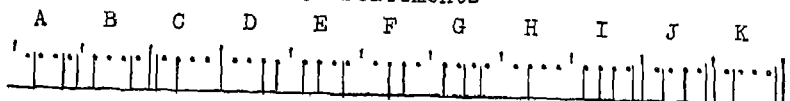
Attitude Toward Self-Expression

32 Statements



Attitude Toward Adopting Children

32 Statements



SELECTION OF TOPICS FOR THE CONSTRUCTION OF ATTITUDE SCALES

On the basis of several criteria such as importance, feasibility, and relevancy to the preschool age level, the following attitudes were selected for this part of the study

- 1 Attitude toward the use of corporal punishment as a means of control
- 2 Attitude toward supervising a preschool child's money allowance
- 3 Attitude toward medical examinations
- 4 Attitude toward the use of praise as a means of control
- 5 Attitude toward preschool education
- 6 Attitude toward self-expression
- 7 Attitude toward adopting children

GENERAL PLAN FOR CONSTRUCTION OF THE ATTITUDE SCALES

The Attitude Variable

Each attitude is thought of as varying along a continuum which ranges in value from one extreme through a mid-point to the opposite extreme. The limits on each of the attitude scales have been defined as follows:

Name of Scale	Extreme Favorable Limit on Step A	Extreme Unfavorable Limit on Step K
Attitude toward supervising a preschool as a means of control	Highly favorable toward the use of corporal punishment when used under conditions defined in the key-concept	Highly unfavorable toward the use of corporal punishment no matter how important the need for control may be
Attitude toward supervising a preschool child's money allowance	Highly favorable toward complete supervision of the preschool child's allowance	Highly unfavorable toward supervision in any form whatsoever of the preschool child's allowance
Attitude toward medical examinations	Highly favorable toward thorough periodic medical examinations given by qualified physicians and technicians	Highly unfavorable toward periodic medical examinations of any kind
Attitude toward the use of praise as a means of control	Highly favorable toward the use of praise when used under the conditions defined in the key-concept	Highly unfavorable toward the use of praise as a means of control
Attitude toward preschool education	Highly favorable toward preschool education as defined in key-concept	Highly unfavorable toward preschool education as defined
Attitude toward self-expression	Highly favorable toward self-expression, that is, favorable toward giving the child very complete freedom in self-expression	Highly unfavorable toward self-expression, that is, disapproval of even a small amount of freedom in self-expression
Attitude toward adopting children	Highly favorable toward adopting a child which is at least average both mentally and physically	Highly unfavorable toward adopting children under ordinary conditions

Definition of the Key-Concept

The importance of defining the "key-concept" has already been described. The definitions used in this study are as follows:

Corporal punishment as used in the scale on this topic has reference to the infliction of punishment in the form of spanking, slapping, or hitting any part of the child's body. It is also assumed that the corporal punishment is used in moderation and not in extremes and that it is administered when the adult is *not* under the influence of the strong emotion of anger.

Since the term allowance may be most inclusive, definite conditions have been set up for the key-concept in the scale which deals with supervising a preschool child's allowance. The writer has assumed that the preschool child's allowance is not more than ten cents weekly and that the allowance is given to the child once each week. This allowance is the child's only source of income.

At least two definite attitudes appear to be associated with medical examination: an attitude associated with the different types of practitioners, such as osteopaths, chiropractors, doctors of medicine, and others, and a second attitude, associated with the degree of efficiency of a given type of doctor. The latter concept has been selected for this scale, and the term medical examinations as used here has reference to the most thorough examination available. It also assumes that (unless otherwise designated in the statement) the examination is carried out by physicians and technicians whose ability is recognized by the medical profession as being of the highest quality.

Praise as used in the scale on this topic means a verbal expression of approval directed toward the child. Unless a special degree of praise is mentioned in the individual statement, the assumption is that the praise is not given in extremes, either in amount or emotional intensity.

Since preschool groups of various types exist, it seems best to define preschool education as the training received in nursery schools or preschools which have recognized educational programs for children between the ages of eighteen months and five years. Day nurseries are not included in this group.

The term self-expression as it is related to the writer's scale has been defined as any activity, verbal expression, or pose which the child engages in through his own initiative and which symbolizes a thought, feeling, character, or quality within the child.

The word "adopting" has reference to making a child one's own.

through legal procedure. It is assumed throughout the scale that the children offered for adoption test average or above both mentally and physically unless otherwise stated.

The Selection of Statements and Situations

Short statements, in so far as possible, were used, and a definite effort was made to select statements which were meaningful to a large group of people. An attempt was also made to reduce ambiguity to a minimum.

In general, from forty-five to ninety sample statements (including situations) were used as a starting point in the construction of each scale. These statements were obtained from a variety of sources including books, magazine articles, and comments by parents. In certain scales, such as the one on self-expression, it appeared quite likely that due to the type of attitude continuum many items would be eliminated through ambiguity of statements. It seemed quite important, therefore, that scales of this type should contain a greater number of attitude statements than those scales in which ambiguity was less likely to become a factor.

In selecting the statements used in the self-expression scale, care was taken to include a varied sample of opinions by introducing situations which call forth several factors. To illustrate: It seems highly probable that the degree of self-expression which meets with general approval is largely based upon four factors, the degree of conflict between the activity and the individual's attitude toward (1) accepted social customs, (2) personal rights, (3) property rights, and (4) danger situations. Therefore, in constructing this scale it seemed best to select a sampling of statements involving the making of judgments under the influence of different intensities of these conflicts.

Eighty-five statements were selected as a starting point in the construction of this scale. Of the first sixty-four statements twenty-seven involved the use of property, nineteen involved personal rights, fourteen involved social customs, and four included danger situations. Each of the remaining twenty-one statements is centered around one of the specific situations. The specific situations also include a sample from each of the above groups.

Method of Determining Scale and Q Values

The results of the one hundred judges who sorted the statements were tabulated and a table of accumulative proportions was prepared.

For each statement, the median score and quartile range was determined. The median score was considered the scale value for each statement.

Selecting Statements for the Final Scale

After the scale and Q values for each statement were determined, all statements whose Q values were more than two scale units were discarded. Whenever possible, statements with small Q values were retained. In cases where more than one statement was assigned a single scale value, only one of these statements was retained. The statements which were left were then sorted into steps and their relative positions on a linear continuum was plotted. A further discarding took place until the scale values of the remaining statements fell at fairly regular intervals. Care was also taken to have an equal number of statements on each side of the neutral point, and approximately an equal number in each step. The scale values and Q values for each statement in the seven attitude scales are found in Table 1. A copy of each of the final attitude scales will be found in the copy of the thesis on file in the University of Iowa library.

The position of the statements retained in each of the scales on the linear continuum will be found below.

Table 1
Scale and Q Values for Statements in Attitude Scales

Corporal Punishment		Money Allowance		Medical Examinations		Praise		Preschool Education		Self-Expression		Adopting Children	
Q Value	Scale Value	Q Value	Scale Value	Q Value	Scale Value	Q Value	Scale Value	Q Value	Scale Value	Q Value	Scale Value	Q Value	Scale Value
1.4	1.1	.2	11.0	.1	11.0	1.8	9.1	1.8	8.7	1.1	6.7	1.3	9.7
1.7	9.1	0.0	0.0	1.0	6.6	1.8	8.1	1.7	7.9	.6	5.4	1.8	2.9
1.2	10.4	1.3	2.3	1.9	9.0	1.8	9.4	1.8	10.7	1.9	.7	1.6	8.9
1.6	4.3	1.7	5	1.6	8.8	1.5	8.3	1.8	9.6	1.2	.3	1.9	9.0
1.4	2.4	1.4	9.7	2.0	10.2	1.7	3.4	1.9	6.6	1.4	9.7	1.2	10.2
1.6	2.7	1.7	3.3	1.6	4.2	1.4	1.8	1.9	8.5	1.9	3.6	1.8	.8
.6	11.0	1.1	1.1	2.0	.1	1.8	2.1	1.5	9.2	1.7	3.1	1.6	5.4
.8	.8	1.5	8.7	1.6	.9	1.4	.5	1.8	7.6	2.0	3.3	1.3	9.2
1.0	6.7	1.4	6.2	2.0	10.1	.9	4.7	2.0	8.9	1.9	5.2	1.4	10.9
1.9	6.9	1.5	2.3	1.6	8.9	1.4	3.8	1.8	9.3	2.0	10.5	1.4	10.9
2.0	9.3	1.5	3.7	1.2	2.3	1.0	4.4	1.7	3.5	2.0	.9	2.0	7.4
1.6	8.9	2.0	8.2	1.6	1.6	1.1	1.7	1.2	1.8	2.0	7.6	1.4	9.9
1.8	8.7	1.6	9.3	2.0	1.4	1.2	2.3	1.1	1.7	2.0	1.6	1.9	8.6
1.9	9.0	1.8	1.9	1.9	3.7	1.4	3.0	1.9	6.3	1.8	2.9	2.0	8.1
1.3	1.7	1.8	10.1	1.9	9.1	1.3	2.7	1.6	2.8	1.9	4.3	1.6	1.9
1.8	9.3	1.1	6.9	1.8	1.0	1.8	5.8	.4	.1	1.6	10.3	2.0	7
1.7	3.4	1.7	7.5	1.4	0.0	1.8	8.7	1.8	2.5	1.9	2.3	1.6	2.4
1.4	4.0	.6	5.6	1.8	7.1	1.9	6.8	1.3	5.4	1.9	2.1	1.5	2.0
1.6	3.5	1.7	8.3	1.5	5.5	1.3	1.6	1.8	2.3	2.0	1.1	2.0	8.3
1.9	8.0	1.6	7.4	1.7	2.6	1.7	7.7	1.5	2.9	1.6	2.2	1.8	4.7
.8	4.4	1.4	4.4	2.0	7.7	2.0	9.7	1.0	1.6	1.8	10.9	1.3	1.7
1.5	4.8	.5	5.5	.9	5.4	1.5	4.0	.6	.5	1.9	8.6	1.5	3.8
.6	5.6	2.0	10.5	1.7	5.3	2.0	7.6	1.4	10.1	1.7	8.9	1.2	.3
2.0	7.8	1.7	1.5	1.3	1.8	.5	5.5	.0	11.0	1.9	8.5	.7	5.6
.6	5.4	1.5	1.4	1.7	9.3	1.3	6.1	.5	5.5	2.0	1.3	1.4	4.2
1.5	8.4	1.1	4.7	2.0	8.3	1.7	6.9	1.5	3.2	1.8	1.7	1.4	4.3
1.6	8.3	1.6	4.2	1.0	9.7	1.3	4.6	1.6	4.7	2.0	9.8	1.9	3.6
1.9	1.9			1.4	2.2	1.7	8.0	1.6	4.6	1.9	7.5	1.9	6.7
1.6	3.1					1.4	10.4	2.0	4.4	1.8	8.0	.2	11.0
.8	1					1	0.0	1.5	2.2	1.6	10.3	1.5	1.2
1.4	.3					.3	11.0	1.9	10.0	2.0	9.3	1.1	6.5
1.6	1.4					1.3	.4	1.3	4.8	.5	5.5	2.0	10.0

RELIABILITY OF THE SCALE VALUES

The reliability of the scale values for each attitude scale was determined by means of the following formulas (10, p 42).

The average Q values of the opinions in each attitude scale were determined. By dividing the average Q value by two, the average quartile value was found

$$q = \frac{Q}{2}$$

The formula used to determine the standard deviation of the distribution of scale values was

$$\sigma_{\text{dist}} = \frac{q}{0.67}$$

Since "the scale-value of an opinion is the median of its distribution on the subjective scale," "the standard error of the scale value" was determined as follows.

$$\sigma_{\text{med}} = \sigma_{\text{dist}} \frac{\sigma}{\sqrt{n}}$$

The probable error of the scale value was then obtained from the standard error of the scale value

$$PE_{\text{med}} = 6745 \times \sigma_{\text{med}}$$

The reliability for the scale values of each of the eight attitude scales is satisfactory as shown by the following tabulation

Attitude Scale	Average Q Value	q	Standard De- viation of Distribution	Standard De- viation of Median	Probable Error of Median
Corporal punishment	1.44	.72	1.07	± 13	± .09
Money allowance	1.35	.67	1.00	± 12	± .08
Medical examinations	1.50	.75	1.12	± 14	± .09
Praise	1.41	.70	1.04	± 13	± .09
Preschool education	1.46	.73	1.09	± 14	± .09
Self-expression	1.73	.86	1.28	± 15	± .10
Adopting children	1.56	.78	1.15	± 14	± .09

MATURITY IN ATTITUDE

In interpreting the data as to college students' attitudes as well as in designing programs to test the modifiability of these, it is helpful to have some indication of what may be considered a mature attitude. The attitudes of highly trained subjects engaged in the process of guiding children has been used by Ojemann (6) as an indication of maturity, and the difference between the attitudes of trained and untrained subjects has been used as a measure of need. The theory underlying this procedure is described by Ojemann (6).

The writer has followed this procedure. The attitude scales were submitted to ten highly qualified judges, all staff members in standard

institutions of higher education Five institutions were represented by the group

Each judge was a specialist in the field of child development and parent education, and at the time the judgments were made, all were actively engaged in professional work Of these judges, four were parent education research specialists and two were parent education specialists engaged in classroom teaching or in field work Each of the above six judges held a Ph D degree in child development and parent education or related fields The remaining four judges each held master's degrees Three were actively engaged in nursery school teaching, and the fourth was in charge of a college department of child development at the time the judgments were made Five of the judges are parents and all were in close contact with preschool children

Instructions for checking these scales were given to the judges Each judge was requested to check those items which expressed what he considered a mature attitude for college students to hold toward each of the topics

The composite judgment of the experts concerning each of the topics is summarized below.

Attitude Scale	Mean Scale Value	Standard Deviation	Range
Corporal punishment	7.48	1.10	2-23
Money allowance	6.55	.61	1-53
Medical examinations	1.53	.02	.52
Praise	4.33	.76	2-55
Preschool education	2.46	.38	1-16
Self-expression	4.14	.45	1-16
Adopting children	2.79	.15	1-45
Fear	8.49	.37	1-09
Self-reliance*	2.88	.45	1-20

*Self-reliance values were determined by Ojemann (5)

The best agreement among the judges, as indicated by the range (.52 scale value), was found on the attitude scale relating to medical examinations

The largest standard deviation was on the scale relating to corporal punishment (1.10 scale values) On the other scales, all standard deviations were less than .77 scale values

THE ATTITUDE OF COLLEGE STUDENTS IN SELECTED PHASES OF CHILD DEVELOPMENT

In this part of the study, the attitudes and needs of college students with reference to nine selected attitudes in the field of child development were investigated. In addition to the seven scales constructed by the writer, two scales constructed by other investigators were used

One, an attitude scale relating to the use of fear as a means of control, was constructed by Ackerley and used in her study (1). This scale is very similar in type to the scales constructed by the writer. The reliability of the scale values for the items in the scale relating to fear were determined by the method described under Construction of Attitude Scales (p. 22-28). This reliability (an approximate estimate of the reliability of each item in the scale) is based on the sortings of sixty judges. It is as follows:

$$\begin{array}{rcl} \sigma_{dist} & & 1.01 \\ \sigma_{med} \text{ (or scale values)} & \pm & .16 \\ PE_{med} \text{ (or scale values)} & \pm & .11 \end{array}$$

The second scale, constructed by Ojemann (5), is designed to measure attitude toward the development of self-reliance at the preschool level.

The reliability of this scale, based on the correlation of odd and even scores from 119 parents and determined by the product-moment formula with the application of the Spearman-Brown prophecy formula, is as follows:

$$r = .96 \pm .01$$

SUBJECTS

Most of the subjects in this part of the investigation were students registered in English and home economics classes at the Oregon State College. In addition, 147 subjects in other institutions responded to each of the attitude scales. The institutions represented in this group are as follows:

Albany College (Oregon)	32
College of Puget Sound	17
University of Missouri	44
University of New Mexico	23
Washington State College	31

Since the tests at Oregon State College were administered at several meetings, the total number of subjects varies slightly. The number for each scale follows:

Attitude Scale	Women	Men	Total
Corporal punishment	629	37	666
Money allowance	641	36	677
Medical examinations	608	37	645
Praise	631	38	669
Preschool education	606	38	644
Self-expression	606	37	643
Adopting children	587	37	624
Fear	621	37	658
Self-reliance	678	37	715

THE ATTITUDE OF COLLEGE STUDENTS

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Table 2

Attitudes of College Students, Freshmen, Sophomore, Junior, and Senior College Women Compared with the Attitudes of Mature Subjects

Attitude Scale	Number	Mean Score	Standard Error of Mean	Standard Deviation	Mean Score	Standard Deviation	Difference Between Mean Scores
College Students					Judges		
Corporal punishment	666	5.33	.068	1.77	7.48	1.10	
Money allowance	677	5.94	.035	.91	6.55	.61	
Medical examinations	645	1.76	.026	.66	1.53	.02	
Praise	669	4.21	.043	1.10	4.33	.76	
Preschool education	644	2.52	.041	1.04	2.46	.38	
Self-expression	643	4.99	.028	.73	4.14	.45	
Adopting children	624	3.33	.057	1.41	2.79	.15	
Fear	658	7.76	.046	1.19	8.49	.37	
Self-reliance	715	7.71	.070	1.90	2.88	.45	
Freshmen College Women					Judges		
Corporal punishment	215	5.18	.109	1.60	7.48	1.10	
Money allowance	214	5.87	.064	.93	6.55	.61	
Medical examinations	206	1.74	.037	.54	1.53	.02	
Praise	210	4.41	.074	1.06	4.33	.76	
Preschool education	216	2.68	.074	1.09	2.46	.38	
Self-expression	213	5.05	.054	.79	4.14	.45	
Adopting children	211	3.28	.087	1.26	2.79	.15	
Fear	213	7.52	.088	1.29	8.49	.37	
Self-reliance	261	8.20	1.04	1.67	2.88	.45	
Sophomore College Women					Judges		
Corporal punishment	134	5.05	.161	1.75	7.48	1.10	
Money allowance	115	5.69	.085	.92	6.55	.61	
Medical examinations	131	1.88	.103	1.19	1.53	.02	
Praise	130	3.99	.087	1.00	4.33	.76	
Preschool education	115	2.56	.105	1.12	2.46	.38	
Self-expression	125	5.04	.064	.71	4.14	.45	
Adopting children	123	3.65	.130	1.49	2.79	.15	
Fear	130	7.91	.101	1.18	8.49	.37	
Self-reliance	125	8.09	.187	1.88	2.88	.45	
Junior College Women					Judges		
Corporal punishment	83	5.70	.220	2.01	7.48	1.10	
Money allowance	104	6.08	.074	.76	6.55	.61	
Medical examinations	99	1.66	.049	.50	1.53	.02	
Praise	87	4.07	.127	1.19	4.33	.76	
Preschool education	86	2.61	.108	1.00	2.46	.38	
Self-expression	81	4.75	.065	.58	4.14	.45	
Adopting children	90	3.87	.150	1.41	2.79	.15	
Fear	84	7.79	.135	1.34	8.49	.37	
Self-reliance	104	7.39	.172	1.76	2.88	.45	

Table 2 (Continued)

Attitudes of College Students, Freshmen, Sophomore, Junior, and Senior
College Women Compared with the Attitudes of Mature Subjects

Attitude Scale	Number	Mean Score	Standard Error of Mean	Standard Deviation	Mean Score	Standard Deviation	Difference Between Mean Scores
	Senior College Women				Judges		
Corporal punishment	105	6.54	.175	1.80	7.48	1.10	1.94
Money allowance	112	6.05	.081	.85	6.65	.61	.50
Medical examinations	102	1.67	.044	.44	1.53	.02	.14
Praise	112	4.12	.093	.98	4.33	.76	.21
Preschool education	94	2.13	.050	.48	2.46	.38	.33
Self-expression	103	4.92	.069	.70	4.14	.45	.78
Adopting children	87	3.13	.126	1.18	2.79	.15	.34
Fear	102	7.91	.095	.97	8.49	.37	.58
Self-reliance	103	7.14	.152	1.65	2.88	1.45	4.26

ATTITUDES OF COLLEGE STUDENTS

The score for each student on the several scales was determined by averaging the scale values of all statements that were endorsed on a given scale. Throughout this study, in comparing various groups with reference to attitudes, the average of the individual scores was used. The average of the total group, the variability of the distribution, and the comparisons of the total group with the mature subjects are given in Table 2.

The general observed trend of student attitude as measured by the scales used in this study appears to be more favorable toward the use of fear, corporal punishment, praise, and close supervision of a preschool child's money allowance, than the attitude of the judges.

A trend toward a more unfavorable attitude than that held by the judges was found toward the topics relating to adopting children, self-expression, self-reliance, medical examinations, and preschool education.

Attention should also be called to the fact that student attitude is less clear-cut than is the attitude of the judges, who represent a greater degree of maturity. This is shown by the fact that the standard deviations for all of the attitude scales are smaller for the judges than for the student groups. This same fact is also shown in a later part of the chapter which deals with the analysis of student endorsements.

Differences in attitude (as measured by the attitude scales used in this study) between students and mature levels are as follows for the several scales

Attitude Scale	Difference
Corporal punishment	215
Money allowance	61
Medical examinations	23
Praise	12
Preschool education	66
Self-expression	85
Adopting children	54
Fear	73
Self-reliance	483

These data appear to show that attitudes toward child development problems, when separated into specific areas or topic units, tend to show various degrees of maturity. A mature attitude in one area cannot be relied upon as an index of maturity in other areas of the field. *M*

Analysis on the Basis of College Classification

To determine differences in attitude which may exist with reference to variations in background, the writer has analyzed the attitude of groups in which such factors as the following are held constant: year in college (i.e. classification according to class), decile ranking on psychological tests, and sex.

The mean scores for freshmen, sophomore, junior, and senior women compared with the mature or judges' attitude will be found in Table 2. The data for all of the classes will be summarized when those for the other classes have been presented.

For the scale relating to preschool education, differences between the average of student scores and those of the judges appear, upon first analysis, to indicate that the seniors in this study were less mature than were the freshmen. The mean scores for freshmen, sophomores, juniors, and seniors for this scale are as follows: 2.68, 2.56, 2.61, 2.13. The judges' mean is 2.46. These means show a tendency for freshmen, sophomores, and juniors to hold a more unfavorable attitude toward preschool education than experts in the field. The seniors on the other hand appeared to be more favorable toward this topic than the judges. It is quite possible that this extremely favorable attitude on the part of the latter was due to the fact that the emergency nursery school project was being introduced into the state of Oregon at the time these measurements were made. Many of the seniors and graduate students were making inquiry concerning personal qualifications for these positions.

Juniors and seniors appeared to be more favorable toward self-expression than did freshmen and sophomores. The attitudes of the

former two groups more nearly conformed to mature attitudes than do the attitudes of the latter two groups

Sex Differences

Although the number of college men serving as subjects in this part of the study is too limited to draw any definite conclusions with reference to sex differences, certain trends appear. These trends are set forth, not as true differences but rather for the purpose of showing probable trends to be investigated further. If true differences in attitude between sexes exist, these differences suggest possible sources of friction in parent-parent relationships and also in brother-sister relationships. Table 3 presents the pertinent data.

As a means of comparing the attitudes of college men and women, the differences between the mean scores of the judges and the means for men and women students are summarized below.

Attitude Scale	Difference Between Means	
	Men	Women
Corporal punishment	2.70	2.12
Money allowance	.64	.57
Medical examinations	.40	.22
Praise	.18	.12
Preschool education	1.56	.03
Self-expression	.92	.84
Adopting children	1.23	.51
Fear	1.21	.70
Self-reliance	5.21	4.78

As measured by the scales used in this study, it appears that men tend to hold an attitude more unfavorable toward the following topics than do women: adopting children, self-expression, self-reliance, medical examination, and preschool education.

These scales also show the men tend to be more favorable than do women toward the use of fear and corporal punishment.

Although the number of men subjects must be considerably increased before the trend can be considered established, it appears that in general the attitude of women toward the topics selected for this study are more nearly mature than are those of men. The difference in the attitude toward preschool education is interesting.

Relationship Between Psychological Ratings and Attitudes

Since individuals with high intelligence quotients, in general, tend to show superiority in learning knowledge, the question concerning

Table 3

Comparison of Mean Attitude Scores for College Men and Women with Mean Scores for Judges

Attitude Scale	Number	Mean Score	Standard Error of Mean	Standard Deviation	Mean Score	Standard Deviation	Difference Between Mean Scores
College Men					Judges		
Corporal punishment	37	4.78	.290	1.80	7.48	1.10	
Money allowance	36	5.91	.150	.90	6.55	.61	
Medical examinations	37	1.93	.106	.64	1.53	.02	
Praise	38	4.51	.217	1.34	4.33	.76	
Preschool education	38	4.02	.270	1.69	2.46	.38	
Self-expression	37	5.06	.110	.67	4.14	.45	
Adopting children	37	4.02	.260	1.56	2.79	.15	
Fear	37	7.28	.217	1.32	8.49	.37	
Self-reliance	36	8.09	.319	1.92	2.88	.45	
College Women					Judges		
Corporal punishment	629	5.36	.070	1.77	7.48	1.10	
Money allowance	641	5.98	.036	.91	6.55	.61	
Medical examinations	608	1.75	.029	.70	1.53	.02	
Praise	631	4.21	.042	1.06	4.33	.76	
Preschool education	606	2.43	.041	1.01	2.46	.38	
Self-expression	606	4.98	.030	.74	4.14	.45	
Adopting children	587	3.30	.050	1.41	2.79	.15	
Fear	621	7.79	.047	1.17	8.49	.37	
Self-reliance	678	7.66	.070	1.87	2.88	.45	

the relationship between intelligence and the incidental learning of attitudes at once arises

An examination of the psychological ratings of college students showed that in practically all cases upper division students were in the upper 50 per cent according to psychological classification. Few of the students in the lower levels of intelligence completed their sophomore year. It seemed best, therefore, to use freshmen women only for this part of the study since a more even distribution of psychological ratings was found in this group. Limiting students to a specific sex and class also tends to hold conditions more nearly constant with reference to background, maturity, and the influence of a college environment.

Psychological ratings determined by means of the psychological tests published by the American Council on Education were available for 186 freshmen women. A few of these students failed to take attitude tests used in the study. The number of subjects, therefore, for each of the several scales ranges from 181 to 186.

IOWA STUDIES IN CHILD WELFARE

Table 4

Comparison of Freshmen Women's Attitude Scores When
Classified According to Decile Placement on
Psychological Ratings

Decile	Num- ber	Mean Score	Standard Error of Mean	Stand- ard De- viation	Mean Dif- ference
Corporal Punishment					
First	16	5.64	.322	1.29	1.84
Second	18	5.07	.278	1.19	2.41
Third	26	4.81	.302	1.54	2.67
Fourth	16	5.41	.304	1.22	2.07
Fifth	22	5.03	.300	1.40	2.45
Sixth	19	5.05	.486	2.12	2.43
Seventh	11	5.49	.453	1.50	1.99
Eighth	23	5.04	.309	1.48	2.44
Ninth	18	4.74	.342	1.45	2.74
Tenth	16	4.54	.430	1.74	2.94
Money Allowance					
First	15	5.75	.17	.68	.80
Second	17	5.82	.22	.90	.73
Third	27	5.55	.20	1.06	1.00
Fourth	16	6.09	.13	.53	.47
Fifth	20	5.84	.13	1.05	.71
Sixth	16	5.64	.20	.80	.91
Seventh	12	5.83	.28	1.00	.72
Eighth	24	5.81	.12	.58	.74
Ninth	18	6.09	.15	.64	.46
Tenth	18	6.20	.11	.48	.35
Medical Examinations					
First	15	1.60	.13	1.32	.07
Second	18	1.58	.13	.56	.05
Third	27	1.81	.08	.40	.28
Fourth	16	1.66	.14	.57	.13
Fifth	19	2.19	.44	1.93	.66
Sixth	18	1.78	.08	.32	.25
Seventh	12	1.46	.07	.24	.07**
Eighth	24	1.50	.06	.28	.03**
Ninth	18	1.72	.08	.34	.19
Tenth	17	1.74	.05	.28	.21
Praise					
First	16	4.83	.28	1.12	.50**
Second	18	4.12	.18	.78	.21
Third	26	4.78	.20	1.01	.45**
Fourth	16	4.04	.25	.98	.29
Fifth	20	4.22	.18	.79	.11
Sixth	18	4.63	.27	1.17	.30**
Seventh	12	4.53	.34	1.19	.20**
Eighth	23	4.53	.19	.89	.20**
Ninth	18	4.30	.19	.82	.13
Tenth	16	3.99	.21	.83	1.14
Preschool Education					
First	15	2.62	.22	.89	.16
Second	18	2.49	.15	.64	.03
Third	27	2.51	.13	.72	.15
Fourth	16	2.75	.27	1.08	.30
Fifth	20	2.48	.15	.72	.02
Sixth	18	2.87	.23	1.00	.41
Seventh	12	2.49	.17	.58	.03
Eighth	24	2.54	.12	.60	.10
Ninth	18	2.85	.28	1.24	.39
Tenth	18	2.53	.16	.72	.17
Self-Expression					
First	15	5.32	.18	.72	1.18
Second	18	4.84	.23	1.00	.70
Third	26	4.57	.11	.56	.43
Fourth	16	4.69	.26	1.04	.55
Fifth	20	5.16	.11	.62	1.02
Sixth	18	5.03	.09	.38	.89
Seventh	12	5.22	.27	.94	1.08
					.73

Table 4 (Continued)

Comparison of Freshmen Women's Attitude Scores When
Classified According to Decile Placement on
Psychological Ratings

Decile	Num- ber	Mean Score	Standard Error of Mean	Stand- ard De- viation	Mean Dif- ference
Adopting Children					
First	14	4.16	.49	1.84	1.37
Second	18	3.01	.20	.96	.22
Third	27	3.63	.26	1.56	.84
Fourth	15	3.37	.30	1.18	.58
Fifth	20	2.88	.14	.64	.09
Sixth	19	3.16	.25	1.08	.37
Seventh	12	2.99	.19	.68	.20
Eighth	23	3.40	.29	1.33	.61
Ninth	18	4.16	.46	1.96	1.37
Tenth	18	2.98	.27	1.14	.19
Fear					
First	16	7.36	.38	1.50	1.13
Second	18	7.54	.32	1.36	.95
Third	25	7.43	.25	1.28	1.06
Fourth	16	7.66	.31	1.24	.85
Fifth	21	7.43	.30	1.38	1.01
Sixth	19	7.22	.34	1.43	1.27
Seventh	12	7.69	.24	9.60	.80
Eighth	23	8.31	.12	5.96	.18
Ninth	18	7.76	.22	9.44	.73
Tenth	16	7.31	.40	1.60	1.18
Self-Reliance					
First	14	8.07	.41	1.53	5.19
Second	18	8.42	.39	1.83	5.54
Third	26	8.54	.38	1.93	5.66
Fourth	15	8.12	.53	2.00	5.24
Fifth	18	8.43	.39	1.68	5.65
Sixth	18	8.18	.35	1.47	5.30
Seventh	12	8.98	.36	1.38	6.10
Eighth	24	7.69	.31	1.50	4.81
Ninth	18	7.83	.36	1.52	4.95
Tenth	18	8.03	.40	1.70	5.15

**Indicates the mean scores for groups are more un-
favorable toward the attitude indicated than are
the judges.

The psychological ratings of these college students were taken during freshman week at the Oregon State College. Each member of the entire freshman class was classified in one of ten decile groups. Decile 1 included the group lowest in intelligence and decile 10 the group highest in intelligence.

The average scores for each of the ten decile groups were determined, together with the standard error of the mean and the standard deviation of mean scores. These results are given in Table 4.

Table 5 summarizes for each of the several scales the differences as shown in Table 4 between the mean scores of the freshmen women and the mean scores of the judges. This summary shows the differences in mean attitude scores for each of the ten decile rankings on the psycho-

Table 5
Difference Between Freshmen Women's Mean Scores and Mean Scores of the
Judges Classified According to Student Decile Rankings on the
Psychological Test

Attitude Scale	Decile Ranking									
	1	2	3	4	5	6	7	8	9	10
Corporal punishment	1.84	2.41	2.67	2.07	2.45	2.43	1.99	2.44	2.74	2.94
Money allowance	.80	.73	1.00	.47	.71	.91	.72	.74	.46	.35
Medical examinations	.07	.05	.28	.13	.66	.25	.07	.03	.19	.21
Praise	.50	.21	.45	.29	.11	.30	.20	.20	.13	1.14
Preschool education	.16	.03	.15	.30	.02	.41	.03	.10	.39	.17
Self-expression	1.18	.70	.43	.55	1.02	.89	1.08	.73	.86	.29
Adopting children	1.37	.22	.84	.58	.09	.37	.20	.61	1.37	.19
Fear	1.13	.95	1.06	.83	1.01	1.27	.80	.18	.73	1.18
Self-reliance	.519	.554	.566	.524	.565	.530	.610	.481	.495	.515

logical tests. Small differences on each scale indicate a more mature attitude than do large differences.

An analysis of the data does not show any definite trend in the relationship between ranking on the psychological test and attitude score. There is a slight tendency for the lower levels to be slightly more unfavorable to the use of corporal punishment than the upper levels. There is also a slight tendency for the lower levels to favor closer supervision of the allowance than the higher levels.

The most intelligent students appear to be more favorable toward the use of corporal punishment than do the least intelligent students. This opens up a question as to the relationship between attitude and practice with reference to the use of corporal punishment in the various levels of intelligence. This question of course cannot be answered without further research.

Perhaps in the more intelligent levels of society the pressure of financial difficulties is not felt to the extent that it is in the lower levels of society. If this is true, students from the upper levels of intelligence probably do not feel the need for as rigid supervision of spending as do the students in the lower levels. If this suggested condition actually exists, it may account, at least in part, for the relationship between intelligence and the amount of supervision a preschool child should receive in spending his allowance.

The results in this part of the study indicate in general small relationships between intelligence and attitude at the college freshman level.

THE MODIFIABILITY OF ATTITUDES

The experimental part of this study, which was designed to measure the effectiveness of a learning program in changing attitude, was adapted to the general plan of the child development survey course.

as it was taught at the Oregon State College during the winter and spring quarters of the year 1934. Students enrolled in this course during these terms served as subjects.

PLAN OF THE CHILD DEVELOPMENT COURSE

At the time this study was in progress, the child development survey course at the Oregon State College extended over a period of eleven weeks and included approximately thirty-three fifty-minute class periods. Six of these periods were set aside each term for tests. All students enrolled in this course were expected to spend a minimum of seventy hours in reading or in the preparation of assignments. These seventy hours were in addition to the time spent in the classroom.

The general content of the course and the sequence of the units taught may be briefly outlined as follows:

Topics	Fifty-Minutes Class Periods
1 Preschool education	1
*2 Heredity and environment (including material on adopting children)	2
3 Physical growth	2
4 Motor development	2
5 Mental growth (including language development)	2
6 Emotional development	2
7 Social development	1
*8 Self-expression	2
*9 Discipline (including corporal punishment, fear, and praise)	4
*10 Self-reliance	7
A Habit formation	
1 Eating	
2 Sleeping	
3 Eliminating	
4 Washing and dressing	
5 Play	
11 Sex education	1
12 Nervous habits	1

*Units containing topics included in the experimental part of the study are indicated by an asterisk.

Devising the Learning Program Criteria

The "standard on learning," prepared by Ojemann and reported in an unpublished manuscript, was used as a basic guide in planning the series of learning experiences. This standard consists essentially of validated generalizations related to learning.

With the above material in mind, the following criteria were set forth:

- 1 It is desirable that learning activities have a high interest value for the learner.

- 2 It is desirable that the learning experience be of such a nature as to provide opportunity for the learner to recognize his own needs and the values which may be derived from the learning experience with reference to his own development
- 3 Wherever knowledge is involved, the learning experience should offer opportunity for the learner to participate in a variety of activities representing various applications of the important generalizations
- 4 Any material used in the development of an understanding of generalizations must be valid, and the total should be sufficiently complete to permit the learner to comprehend the implications of generalizations
- 5 In developing attitudes, the attitude and zeal of the teacher appear to be important factors

Learning Experiences

Construction and Use of Teaching Materials. The teaching materials used in the experimental part of this study include teaching outlines, study guides, and a nursery school observation blank (See copy of thesis on file at the University of Iowa library)

A study guide was prepared for each experimental unit. These guides consisted of specific required reading assignments and also study questions for the student's consideration. All reading assignments were carefully selected with reference to difficulty, interest, and variety of subject matter. Reading materials included in the assigned reference list were placed on the reserve shelf of the college library. This insured the writer that assigned reading materials were available to each student.

In connection with the self-reliance teaching materials, a special observation blank was prepared for students to use as they made observations in the nursery school. The purpose of this assignment was to stimulate the student to make specific observations of the mental and physical characteristics of preschool children as these characteristics are related to the child's ability to become self-reliant.

Since one of the requirements in the survey child development course at the Oregon State College includes an hour observation each week in the nursery school, this assignment continued throughout the time the experimental program was in progress. Although the type of situations which arose during these periods were varied, the same sixteen children and the same nursery school teachers were observed throughout the experimental program. During these observations, students were asked to observe the status of the children's physical and mental growth, and also to observe social and emotional behavior. Since the

writer was the instructor in charge of the nursery school, she continued her usual practice of helping students interpret the behavior of children as situations arose

To promote thoughtful work and to afford the instructors an opportunity to evaluate the observers' understanding of principles, each student was required to submit a written report of the observations and interpretations she made during each visit to the nursery school. These papers were carefully checked to make sure the student submitted a report for each observation period.

Classroom Methods

Throughout the experimental program, a combination of the lecture and discussion method was used. At all times an effort was made to supplement and integrate the knowledge gained from the assigned learning experiences. As stated previously, special emphasis was placed upon the practical application of principles throughout the entire teaching program, thus attempting to promote an active rather than a passive interest. Illustrations of situations involving normal children were used freely. As possible solutions for these situations were discussed, an attempt was made to help the learner become aware of the need for knowledge of generalizations in directing the child's program of learning.

Attitudes of the Classroom Instructor

Realizing the possibility that both the knowledge possessed by the learner or the attitude and enthusiasm possessed by the teacher may influence the changing of the learner's attitude, a description of the characteristics of the teacher is included at this point.

The classroom instructor in charge of the experimental part of the study was at the time Professor of Child Development and Acting Head of the Department of Household Administration. She had had experience both as a parent and as a teacher. She evidenced a high degree of enthusiasm in her work.

The attitudes held by the instructor in charge of the learning program (as measured by the attitude scales used in this study) are listed below, together with the mean of the ten judges for comparison.

Attitude Scale	Mean Score	
	Instructor	Judges
Corporal punishment	8.93	7.48
Praise	5.07	4.33
Self-expression	3.99	4.14
Adopting children	2.79	2.79
Fear	8.56	8.49
Self-reliance	2.81	2.88

It will be seen that the instructor in charge of the learning program held attitudes which conform fairly well to the composite judgment of the ten judges.

Class Attendance

Since class attendance is required of all college students, only an occasional absence due to illness occurred during the administration of the experimental program. In cases where absences did occur, the student was held for all required assignments. She usually borrowed class notes from a student who was present on those particular days.

ADMINISTRATION OF THE LEARNING PROGRAM

Subjects

Ninety students enrolled in the several sections of the child development survey course at the Oregon State College during the winter and spring terms of the college year 1933-1934 served as subjects for the experimental part of this study. These subjects, all women, were distributed among the college classes as follows: eighteen graduates, twenty-eight seniors, thirty juniors, eleven sophomores, one freshman, and two special students. The graduate students, with three exceptions, were young women who had graduated from college or normal school the previous June.

Most of the students included in the control group were students in different sections of a class in household management who had not taken work in child development and who were not registered for such work at the time. Others were selected from students whom the writer knew.

Many of the subjects in the control group were the same for all units of the study. In pairing the groups the writer did, however, make personnel changes for the units when it was necessary to bring the mean scores and standard deviations on the initial tests to approximately the same values as were those in the experimental group. The entire control group, therefore, was not selected until after all students in the experimental group had completed their initial tests.

The control group included approximately the same number of students as did the experimental group.

The students in the control groups were distributed among the various college classes as follows: ten graduate students, thirty seniors, twenty juniors, seventeen sophomores, nine freshmen, and three special students.

Procedure

Initial and final measurements of attitude and knowledge were made. The construction of the knowledge tests will be described later.

Since the testing program for the experimental units alone required a minimum of four hours to administer, the following procedure was adopted as a means of conserving class time. During the first meeting of the class, students were told about the plan of the study. They were then given the attitude scale and the knowledge test on adopting children. Arrangements were made for two meetings within the next three days to administer the remaining attitude and knowledge tests. Students were required to take all attitude scales first and then the knowledge tests. This procedure was followed in administering the tests to prevent any possibility of the test items influencing the first measurement of attitude.

At the beginning of the second week of the term, after all initial tests and scales had been administered, a complete set of study guides was given to each student to enable him to plan the time needed for library work. Each student understood on which dates specific units would be discussed and was expected to have all reference readings on a given topic completed before the class discussion.

A remeasurement of both attitude and knowledge was then made during class immediately following the administration of the learning program for each unit. The time interval between initial and final tests for each of the several units was as follows:

Units	Time Interval, Weeks
Corporal punishment	7
Praise	7
Self-expression	5
Adopting children	1
Fear	7
Self-reliance	9 2/3

The general plan for the control group was similar to that of the experimental group. Initial measurements were taken and following a time interval approximately equal to each of the intervals between specific units for the experimental group, retests were made. All knowledge tests were carefully guarded to prevent them from falling into the hands of students who had not completed the experimental tests.

A knowledge test was constructed for each unit in the experimental part of the study. In the main a multiple choice type of item was used. For each of the seven units, approximately one hundred test

items were devised. The material included in these tests involved knowledge of generalizations incorporated in the learning program.

The general character of the test items required the students' recognition and application of basic principles in situations essentially different from those of the conditions in which they were set forth in the readings and other assigned exercises. When the test items for each unit were assembled in preliminary form, four persons, a graduate student, a college freshman, a high school junior, and a junior high school student, checked the tests. The results were examined to determine the relative difficulty for these students, who represent wide differences in maturity. Some of the items were then deleted from the tests, since they appeared not to be of sufficient difficulty for college level.

All tests were then subjected to the criticisms of the professor in charge of the teaching program, and a further revision of the test items took place. The final revision was completed as the scoring key was prepared.

Preparation of Scoring Key

The process involved in preparing the scoring key served as one means of validating the tests (9, p. 28). This procedure was as follows:

The complete battery of tests was submitted to eight highly qualified judges for criticisms and also for judgments as to what constitutes an acceptable response for each test item. All of those who served as judges were specialists in the field of child development and parent education. Each was either actively engaged in teaching subject matter or in making scientific investigations in the field. Five of the eight judges were parents, and all had had many professional contacts with parents and children. These judges represented four recognized institutions in the field, each from a different section of the United States.

Items retained in the final tests are those upon which an agreement of seven or more judges was obtained. In a few cases an item was retained on the agreement of but six judges, particularly when one or more of the judges either failed to check an item or checked his response in the "I do not know" column.

As a means of determining a numerical value which could be used in determining a student's grade on the test, one point was assigned to each item. A student's score on a given test was, therefore, the sum of the number of items correctly checked.

RELIABILITY OF KNOWLEDGE TESTS

The reliability of the knowledge tests was determined by correlating the initial and final scores for all students included in the control groups. It will be shown later that no significant gains in knowledge were made by these groups. The correlations with probable errors range from 81 ± 0.26 in the adopting children scale to 91 ± 0.13 in the scale relating to praise.

Topic	Cases	r	P E
Corporal punishment	90	81 ± 0.26	
Praise	90	91 ± 0.13	
Self-expression	90	89 ± 0.17	
Adopting children	62	85 ± 0.24	
Fear	90	90 ± 0.13	
Self-reliance	90	90 ± 0.14	

EXPERIMENTAL RESULTS

Significance of Differences

The formula developed by Lindquist and Foster (4) was used in determining the significance of differences between initial and final

Table 6

Standard Deviations, Mean Scores, and Differences in Mean Scores Between Initial and Final Measurements of Knowledge and Attitude in the Experimental and Control Groups

Attitude Scale	Cases	Initial Test			Final Test			Difference Between Mean Scores	Standard Error of the Difference
		Mean Score	Standard Error of Mean	Standard Deviation	Mean Score	Standard Error of Mean	Standard Deviation		
Experimental Group									
Knowledge									
Corporal punishment	90	24.00	.65	6.20	30.08	.62	4.92	6.08	.374
Praise	90	16.56	.43	4.12	20.46	.36	3.33	3.90	.473
Self-expression	90	35.40	.47	4.46	39.60	.48	4.66	4.70	.666
Adopting children	61	44.30	1.01	7.80	56.88	.89	6.90	12.68	.694
Fear	90	55.73	.96	9.09	63.72	.81	8.74	7.99	.983
Self-reliance	90	34.46	.59	5.64	38.99	.53	3.08	4.53	.521
Attitude									
Corporal punishment	90	5.52	.19	1.75	7.32	.15	1.75	1.80	.212
Praise	90	4.09	.12	1.09	4.82	.10	.99	.73	.135
Self-expression	90	5.01	.07	.63	4.28	.06	.53	.76	.085
Adopting children	61	3.32	.15	1.19	3.47	.13	1.06	.15	.146
Fear	90	7.94	.11	1.02	8.38	.07	.64	.44	.161
Self-reliance	90	7.09	.18	1.72	4.94	.16	1.53	2.24	.189
Control Group									
Knowledge									
Corporal punishment	90	24.53	.75	7.12	25.00	.61	5.00	.47	.374
Praise	90	16.28	.45	4.27	16.07	.45	4.24	.21	.473
Self-expression	90	35.22	.87	4.43	35.06	.71	4.70	.18	.666
Adopting children	62	44.98	.92	7.13	44.82	.98	8.02	.16	.694
Fear	90	55.14	.95	8.99	55.54	.89	8.46	.40	.983
Self-reliance	90	33.41	.62	5.81	33.84	.63	5.98	.43	.521
Attitude									
Corporal punishment	90	5.67	.19	1.81	5.63	.19	1.84	.04	.212
Praise	90	4.16	.11	1.04	4.14	.10	.96	.02	.135
Self-expression	90	5.01	.06	.61	5.04	.07	.87	.03	.085
Adopting children	62	3.26	.17	1.29	3.36	.15	1.15	.10	.146
Fear	90	7.94	.11	1.02	7.97	.12	1.10	.03	.161
Self-reliance	90	7.30	.20	1.81	7.34	.21	1.93	.04	.189

measurements. This formula was selected because it is well adapted to the situation which obtains in this study, i.e. a situation in which identical tests are used for initial and final measurements of a specific variable in both experimental and control groups, and in groups well paired with reference to initial and final performances.

Experimental Group

Knowledge Measurements. The results of the experimental group indicate that significant observed differences between initial and final mean scores on the knowledge tests obtain for all units (Table 6). The observed differences with the standard errors of difference in knowledge gains for these units are as follows: adopting children $12.58 \pm .894$, fear $7.99 \pm .993$, corporal punishment $6.08 \pm .374$, self-reliance $4.53 \pm .521$, self-expression $4.20 \pm .666$, and praise $3.90 \pm .473$.

In all units the observed differences between initial and final mean scores are greater than three times their standard errors of difference in gains. These knowledge gains, therefore, may be considered significant for all units in the experimental group.

The difference on the length of the various knowledge tests accounts in part for the differences in mean score value gains. These gains in terms of score points range from 12.58 to 3.90 points.

Attitude Measurements. An analysis of the experimental data shows that the greatest observed changes in attitude resulting from the administration of the learning program obtained for the attitudes relating to self-reliance and the use of corporal punishment (Table 6). These gains in terms of observed differences between initial and final mean scores, with the standard errors of difference in gains, are $2.24 \pm .189$ and $1.80 \pm .212$ respectively. Observed attitude changes in the other topics used in this study are as follows: self-expression $.75 \pm .085$, praise $.73 \pm .135$, fear $.44 \pm .161$, and adopting children $.15 \pm .146$.

In the scales relating to self-reliance, corporal punishment, self-expression, and praise the observed differences in the mean scores between initial and final measurements are greater than three times the standard errors of the difference in gains. It seems fairly certain, therefore, that changes in attitude toward these topics, as measured by attitude scales, are significant. Changes in attitudes toward self-reliance and corporal punishment are shown graphically in Figures 1 and 2.

In the scale relating to the use of fear, the difference between initial and final mean scores lacks but .04 of a scale unit of being three

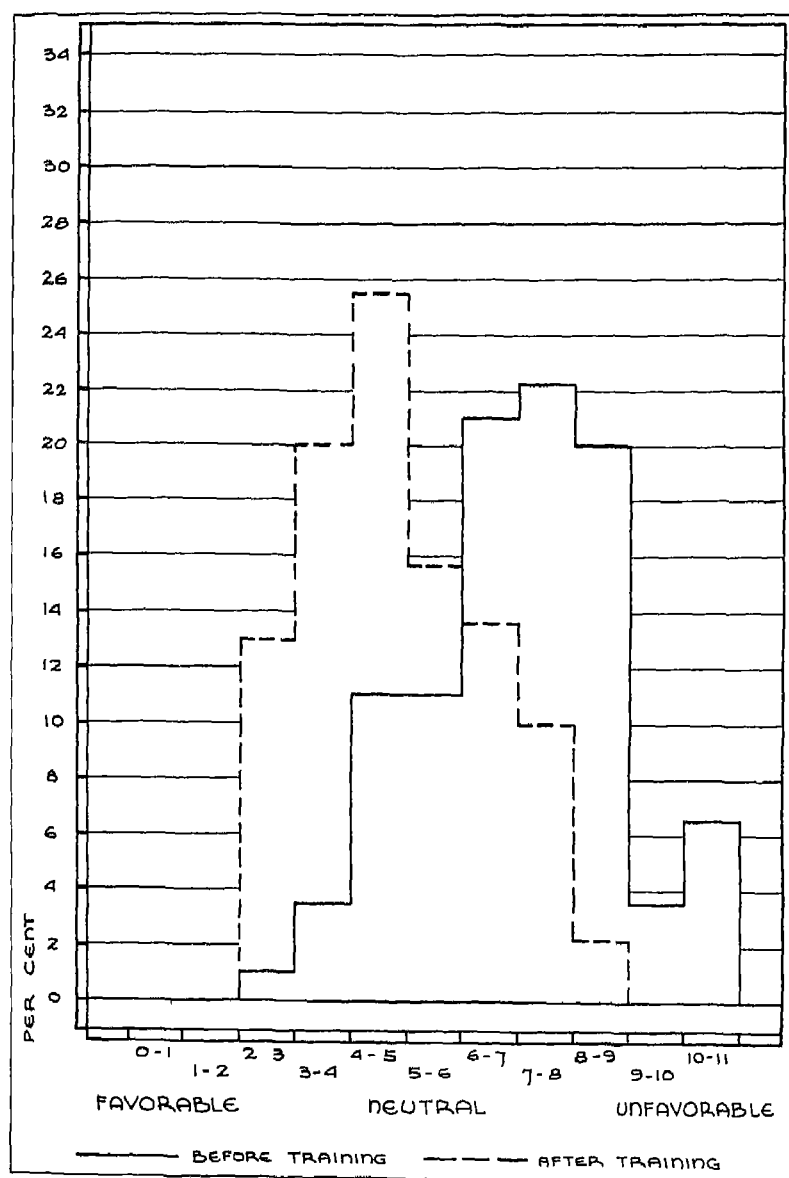


Figure 1 Changes in Attitude Toward Self-Reliance

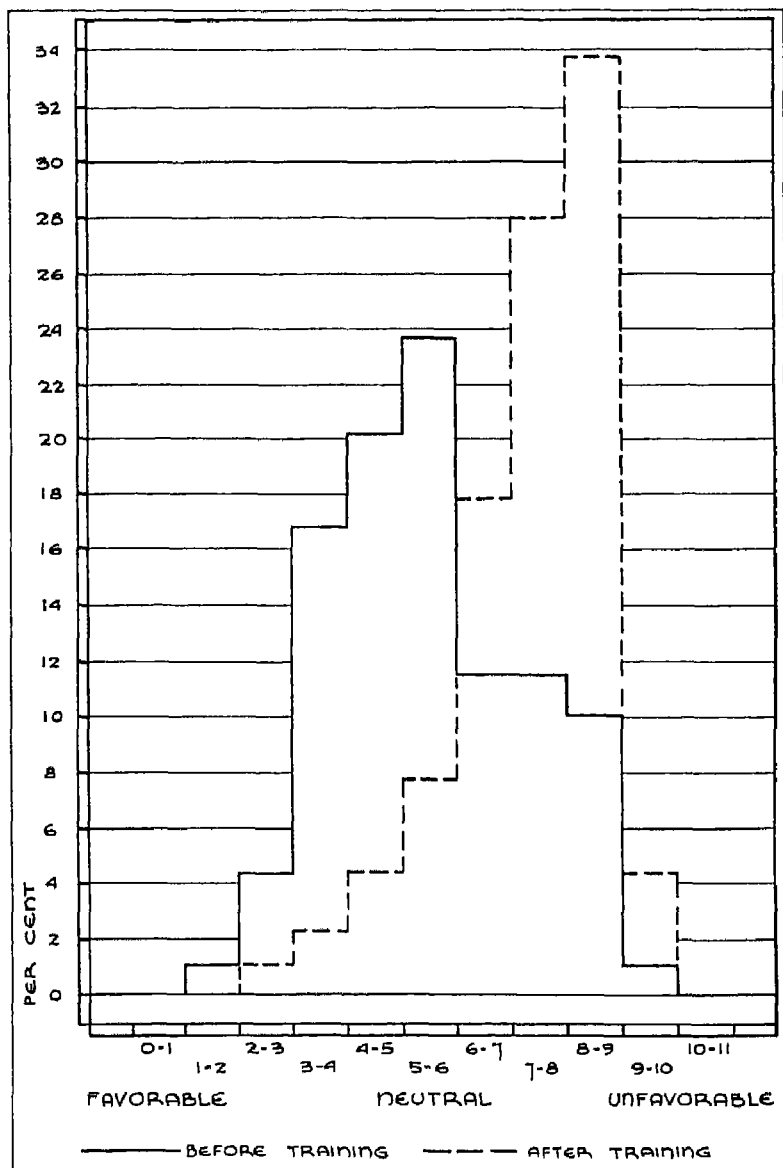


Figure 2 Changes in Attitude Toward Use of Corporal Punishment

times the standard error of difference in gains, or in other words the chances are 99.7 in 100 that the true difference between the mean scores on the initial and final measurements of attitude is greater than zero. The observed difference between the mean scores in this scale may therefore be considered (with very little uncertainty) to be significant.

The fact that the standard deviation of the mean scores changed from 1.02 scale units on the initial test to .64 on the final test also shows a marked tendency for the experimental group to become more homogeneous in its attitude toward the use of fear as a method of control.

In the attitude scale concerned with adopting children, the observed difference between the mean scores on initial and final attitude measurements in the experimental group is .15 scale units and the standard error of the difference in gains is .146. The difference is insignificant.

The fact that the experimental group represents fairly well a random sample of students is clearly shown by comparing the final mean scores on attitude tests for the experimental group with the mean scores for the entire group of students. This comparison (tabulation below) indicates that the experimental group differed only slightly in attitude from the large group of subjects.

Attitude Scale	Mean Student Scores	
	Initial Measurement, Experimental Group	Mean, Large Random Sample of Students
Corporal punishment	5.52	5.33
Praise	4.09	4.21
Self-expression	5.01	4.99
Adopting children	3.32	3.33
Fear	7.94	7.76
Self-reliance	7.08	7.71

Direction of Attitude Changes. The general trend of changes as observed through differences in mean scores for the experimental group on initial and final measurements progressed in the direction of the mean scores of the judges.

Attitude Scale	Measurement				Difference in	
	Initial		Final		Judges' Mean	Final Measurement Mean and Judges' Mean
	Mean	S.E.	Mean	S.E.		
Corporal punishment	5.52	.187	7.32	.145	7.48	.16
Praise	4.09	.115	4.82	.104	4.33	.49
Self-expression	5.01	.066	4.26	.061	4.14	.12
Adopting children	3.32	.151	3.47	.132	2.79	.68
Fear	7.94	.110	8.38	.067	8.49	.11
Self-reliance	7.08	.181	4.84	.161	2.88	1.96

Control Group

Differences between initial and final tests were not significant for either knowledge or attitude measurements in the control groups

Knowledge Measurements Mean differences in knowledge between initial and final tests with the standard error of difference in gain for each unit of the control group (in terms of score points) are as follows: corporal punishment 47 ± 374 , self-reliance 43 ± 521 , fear 40 ± 993 , praise 21 ± 473 , self-expression 16 ± 666 , adopting children 16 ± 894

In each of these units (Table 6) the observed difference is less than three times the standard error of difference in gains. The changes in knowledge for the control group, therefore, are within the range of chance fluctuations, and in no unit can these changes be considered significant.

Attitude Measurements The differences in the observed mean attitude scores on initial and final measurements of the several topics for the control group, with the standard errors of difference in gains for each of the topics, are as follows: adopting children 10 ± 146 , corporal punishment 04 ± 212 , self-reliance 04 ± 189 , fear 03 ± 161 , self-expression 03 ± 085 , praise 02 ± 135 . In none of these units is the observed difference greater than three times the standard error of difference in gains.

The changes of attitude in the control group for all topics, therefore, lie within the range of chance fluctuations (Table 6) and cannot be considered significant.

RELATION BETWEEN GAINS IN KNOWLEDGE AND CHANGES IN ATTITUDE

The data presented in this section permit some analysis of the influence of knowledge on changing attitude. This relationship was studied by correlating gains in knowledge with changes in attitude.

Method of Determining Gains

Since the desirable position on each of the attitude scale continuums varies greatly with the scale, desirable gains in attitude for individual scores were obtained in the following manner:

For each scale the mean of the individual judges' scores was considered the desirable position on the continuum. The difference between initial and final scores for each individual was determined. All changes that progressed in a direction away from the mean of the judges were

called minus and all that progressed toward the mean of the judges were called plus

Individual score gains for knowledge tests were determined in the same manner, i.e. by obtaining differences between initial and final scores. If a larger score was made on the final test, the difference was called plus, and if a smaller score was made on the final test, the difference was called minus. Gains in knowledge were then correlated with gains in attitude, with the following results

Units	Correlation Between Gains in Knowledge and Changes in Attitude
Corporal punishment	+ 26 \pm 064
Praise	+ 218 \pm 069
Self-expression	- 174 \pm 06
Adopting children	+ 152 \pm 085
Fear	+ 10 \pm 07
Self-reliance	+ 193 \pm 069

The results show low correlations ranging from + 26 \pm 064 to - 174 \pm 06. These results as measured tend to indicate that gains in knowledge alone cannot be relied upon as an index for change in attitude.

Final mean scores, however, indicate that actual observed changes did take place for both knowledge and attitude. It would appear that some factor or factors other than knowledge gains alone tend to influence the learning of attitudes.

In an effort to obtain a more complete picture of conditions, the writer has made a summary of the mean gain in attitude that accompanied each gain in knowledge. For this analysis she selected the scale relating to the use of corporal punishment as a means of control. This scale was selected because greater observed gains in both knowledge and attitude were made on this unit as measured by the writer's tests and scales.

This analysis (see the following tabulation) sets forth, in different form than does the coefficient of correlation, the fact that no significant relationship exists between gains in knowledge and gains in attitude. In several cases where students made either no gains or minus gains in knowledge, very definite gains in attitude were made. In other cases gains were made in knowledge with minus scores on attitude. A similar analysis was made for the scale relating to self-reliance. In this scale, as in the scale relating to corporal punishment, large gains in both knowledge and attitude were made.

Of the ninety students included in the experimental group, thirteen

made initial attitude scores on the self-reliance scale of 4.84 or less (4.84 being the mean score of the experimental group on the final measurement of attitude.) In other words, thirteen students held a more mature attitude on the initial test than the mean of the group at the close of the experimental unit. The mean initial knowledge score for this group is 33.5 or .96 score below the mean of the group on the initial measurement. Those who held a superior attitude on the initial test, therefore, were below the group mean in knowledge.

Gains in Knowledge (Raw Scores)	No Gains in Attitude	Gains in Attitude	Mean Gain in Attitude	Range in Attitude Gains
19		1	1.83	1.83
18		1	3.60	3.60
17		3	3.33	4.45 to 1.26
16		1	1.92	1.92
15		2	2.80	4.80 to .80
14		1	5.73	5.73
13		1	4.83	4.83
12		2	4.13	5.69 to 2.58
11	1	3	1.59	3.18 to — 1.6
10		4	2.11	4.02 to .20
9	1	3	1.28	5.03 to —2.00
8		1	.65	.65
7		5	2.56	4.62 to 1.09
6	1	10	1.83	4.96 to — .66
5	1	9	2.15	4.77 to — .26
4		13	1.57	4.36 to .03
3	1	7	1.63	4.23 to .30
2		3	2.40	5.14 to .19
1	1	6	1.71	3.75 to — .13
0		4	1.15	2.26 to .09
— 1		2	2.88	3.53 to 1.35
— 2				
— 3				
— 4		2	.82	1.52 to .11

Eleven of the ninety students in the experimental group still held an unfavorable attitude on the final measurement, that is, a score of 7.00 or more in scale value (7.08 being the mean value of the entire experimental group on the initial measurement of attitude toward self-reliance.) The mean of the knowledge test scores for this group of eleven is 38.45 points or .44 score value below the mean of the group on the final measurement.

If these measurements can be accepted as true measurements of knowledge and attitudes, it would seem that a superior attitude is not necessarily accompanied by superior knowledge.

It also seems probable that students who hold poor attitudes at the close of a learning program may have at least an average amount of knowledge.

A more detailed picture of relation of gains in knowledge to gains in attitude is given by the analysis of the individual gains in attitude toward self-reliance that accompany specific gains in knowledge as shown in the following tabulation

Gains in Knowledge (Raw Scores)	No Gains in Atti- tude	Gains in Attitude	Mean Gain in Attitude	Range in Attitude Gains
21		1	1 12	1 12
20				
19				
18				
17				
16				
15		1	5 08	5 08
14		2	3 60	5 44 to 1 77
13		1	6 27	6 27
12		2	7 5	1 09 to 42
11		2	3 49	5 01 to 1 98
10		1	5 17	5 17
9		2	3 78	5 08 to 2 49
8	1	5	1 93	4 77 to — 20
7		6	1 69	4 92 to 17
6	1	9	4 14	6 17 to —1 34
5	2	3	1 85	3 34 to —5 16
4		12	1 81	3 67 to 23
3		8	2 91	5 60 to 1 09
2	1	7	1 93	3 81 to 7 5
1	2	7	1 41	5 83 to — 66
0		5	2 18	3 84 to 58
— 1	1	3	1 65	4 92 to — 91
— 2		2	1 64	2 56 to 73
— 3	1		—1 84	—1 84
— 4	1	1	— 88	35 to —2 12

Of the fourteen who made no gains or minus gains in knowledge, only three made no gains or minus gains in attitude. Eleven made attitude gains ranging from 35 to 4 92 scale values.

All students who made knowledge gains of 9 points or more also made gains in attitude.

RELATIONSHIP BETWEEN IQ SCORES AND THE LEARNING OF ATTITUDES

In the section dealing with the attitude of college students in select-
ed phases of child development the writer has shown the lack of rela-
tionship that appears to exist between intelligence and learning atti-
tudes under ordinary environmental conditions.

If, in the learning of attitudes, incidental learning has no greater
influence on those at the higher levels of intelligence than on those at
the lower levels, the question then arises as to the influence of a well-

planned series of learning experiences on the various IQ levels. The attitudes related to self-reliance and corporal punishment were selected for analysis.

The data are given in the following tabulation.

Level of Intelligence		Measurement						
		Mean	Initial S E	S D	Mean	Final S E	S D	Difference in Means
Self-Reliance								
Upper half		7.08	24	1.68	4.63	22	1.53	2.45
Lower half		7.18	41	2.06	5.14	31	1.56	2.04
Corporal Punishment								
Upper half		5.61	26	1.81	8.01	17	1.19	2.40
Lower half		5.50	29	1.49	7.14	21	1.05	1.64

*N = 48 for upper half and 25 for lower half

*N = 48 for upper half and 25 for lower half.

Of the ninety subjects included in the experimental group, psychological ratings were available for seventy-three. Forty-eight of these fell in the upper half and twenty-five in the lower half.

In the scales relating to self-reliance and corporal punishment, students in the upper level of intelligence held initial attitudes that were approximately as immature as were those of the lower level. The differences (or gains in attitude for the upper and lower levels of intelligence) as determined by differences between the mean scores on initial and final measurements are 2.45 for the higher level and 2.04 scale values for the lower level. There appears thus a tendency for students in the upper level of intelligence to make somewhat greater gains than those in the lower level, but the difference is not statistically significant.

In the scale relating to corporal punishment, the students in the upper level of intelligence showed a gain of 2.40 scale steps. Students in the lower half when classified according to intelligence changed from 5.50 to 7.14 mean scale values, or a gain of 1.64 points. The difference in gains is $.76 \pm .27$, which is slightly less than three times its standard error.

These results seem to indicate that there is a tendency toward somewhat greater gains in attitude in the higher levels of intelligence than in the lower, but the differences are small. If these measurements can be considered true measurements, we may say that in the administration of a well-planned series of learning experiences attitudes tend to be changed to a slightly greater extent in students in the upper levels of intelligence.

THE PERMANENCY OF ATTITUDE CHANGE

To determine the extent to which changes in attitude brought about by means of the carefully planned learning program persisted, the

writer, after a period of two years, made a remeasurement of the attitudes held by a random sample of those who served as experimental subjects

Since as a result of the learning program the greatest gains in attitude were made toward the topics relating to self-reliance and corporal punishment, these two attitudes were selected for the remeasurement program.

Most of the experimental subjects, after the period of two years, had graduated from college. The attitude scales, therefore, were mailed to approximately eighty subjects. The sheet of instructions for checking the scales that was used in the experimental investigation was also used for the remeasurement program.

A summary of the forty-eight responses received indicates that although some shift in attitude took place during the period of two years, the influence of the learning program persisted. The data are summarized in the tabulation below.

Measurement	Standard Deviation	Mean	Standard Error of Mean
	Self-Reliance		
Initial	1.79	7.00	.259
Final	1.68	4.82	.242
Remeasurement	1.51	5.21	.210
	Corporal Punishment		
Initial	1.63	5.29	.235
Final	1.66	7.36	.181
Remeasurement	1.62	6.51	.233

Differences between the mean attitude scores on the remeasurement and those of the final scores in the experimental program indicate the amount of observed change that took place in the period of two years. This change is measured in terms of scale units.

Attitude	Difference Between Final Attitude and Remeasurement	
	Difference in Mean Scores	Standard Error of the Difference
Self-reliance	39	.320
Corporal punishment	85	.295

For the attitude toward self-reliance, an observed change of 39 scale values was found. This difference is less than three times the standard error ($\pm .320$). The observed change in the attitude toward corporal punishment (85 scale values) is almost three times its standard error ($\pm .295$).

If the above measurements can be accepted as representative of the situation, it appears that when attitudes are changed by means of a carefully planned learning program only a small change may be observ-

ed at the close of a two-year period following the administration of a learning program

These data are interesting. Other studies at the Iowa Child Welfare Research Station on the attitude toward self-reliance have shown that, under existing conditions and when carefully designed learning programs are not brought to bear upon the problem, an attitude slightly to the unfavorable side of the neutral point obtains on the average in all age groups from early adolescence to middle age. The data in this study tend to show that not only can a significant shift in attitude be produced through a carefully planned learning program but the changed attitude tends to persist.

SUMMARY

This study, which falls primarily in the general area of attitude, has as its purpose to study the needs of college students as they relate to selected attitudes in the field of child development and to determine the effectiveness of a carefully designed learning program in modifying attitudes at the college level. The study involved the construction of seven attitude scales for the objective measurement of attitudes in selected phases of the field of child development. The scales used in this study were constructed by a method which attempts to overcome one of the major defects of the Thurstone-Chave technique. They are designed to measure attitudes toward adopting children, the use of corporal punishment and praise as methods of control, self-expression, medical examinations, preschool education, and the amount of supervision a preschool child should receive in spending his money allowance.

In the second part of the study measurements and analyses were made of the attitudes of 650 college students. Two attitude scales, in addition to those constructed by the writer, were used. These scales include one concerning the use of fear as a means of control and one concerning self-reliance at the preschool age level. The former was constructed by Ackerley and the latter by Ojemann. Differences in student attitude with reference to variations in background were determined. In this analysis a composite of the attitudes of ten highly trained persons was used as a criterion of maturity.

The third part is experimental in nature. The purpose is to measure the effectiveness of a carefully planned learning program in modifying attitude, the relative effectiveness at various intelligence levels, and the permanency of attitude change.

Sixty-one college students registered in child development courses

at the Oregon State College served as subjects for the experimental unit related to adopting children, and approximately ninety served as subjects for each of the remaining units included in this part of the study. The number of students in the control groups were equal to those in each of the experimental units. Control and experimental groups were given initial and final knowledge and attitude tests. The reliabilities of the knowledge tests as measured by the retest method in the control group varied from 81 ± 0.26 to 91 ± 0.13 .

An analysis of the data presented in this study gives the following results:

1. An approximate estimate of the reliability for scale values in each of the several scales is given by the following data, which are based on one hundred judges' sortings and reported in terms of standard deviations of the distribution of scale values, together with the standard deviation of the scale values:

Corporal punishment	$1.07 \pm .13$
Money allowances	$1.00 \pm .12$
Medical examinations	$1.12 \pm .14$
Praise	$1.04 \pm .13$
Preschool education	$1.09 \pm .14$
Self-expression	$1.28 \pm .15$
Adopting children	$1.15 \pm .14$

Based on the sortings of sixty judges, the values for the fear attitude scale reported by Ackerley (1) are $1.01 \pm .16$. The reliability of the self-reliance scale as reported by Ojemann (5) is $.96 \pm .01$.

2. An analysis of the attitudes of 650 college students shows a tendency for the students to be more favorable toward the use of fear, corporal punishment, and supervision of the preschool child's money allowance than highly trained persons.

A trend toward a more unfavorable attitude than that held by highly trained persons was found in the attitudes relating to adopting children, self-expression, and self-reliance. The differences between the college students as a group and the trained persons in the attitude toward use of medical examinations, preschool education, and use of praise are small. It appears, therefore, that maturity toward one attitude cannot be relied upon as an index of maturity toward other attitudes.

3. A comparison of the standard deviations of the distributions of the attitudes of judges and students on each of the several scales shows a much greater spread for the student attitudes.

4. The average scores for women students do not show a very clear-cut trend as one passes from the freshman to the senior level. In

some cases upper division students hold attitudes that are more nearly mature than are those of lower division students. This trend is particularly noticeable for the attitudes relating to corporal punishment as a means of control and self-reliance.

In the scale relating to preschool education there is also a general trend in progress toward a more favorable attitude as the number of years in college increases.

5 Although the number of college men included in this study (thirty-seven) is too small to permit definite conclusions with reference to sex differences in attitude, greater differences were found between the mean scores of the judges and the mean scores of the men than were found for women students on all attitude scales.

6 When the subjects are grouped in terms of intelligence test results, an analysis of these scores shows no uniform trend. There is some tendency for the lower intelligence levels to be slightly more unfavorable toward the use of corporal punishment than the upper levels. There is also a tendency for the lower levels to favor closer supervision of the allowance. Differences in the other attitudes were not observable.

7 The observed differences in attitude scores on initial and final measurements in the experimental group with their standard errors of differences in gains for each of the several scales are as follows: self-reliance 2.24 ± 1.89 , corporal punishment 1.80 ± 2.12 , self-expression $.75 \pm 0.85$, praise $.73 \pm 1.35$, fear $.44 \pm 1.61$, and adopting children $.15 \pm 1.46$.

On the scales relating to self-reliance, corporal punishment, self-expression, and praise, the observed differences in the mean scores between initial and final measurements of attitudes are greater than three times the standard error of difference in gains.

In the scale relating to fear, the chances are 99.7 to 100 that the true difference between initial and final measurements of attitude is greater than zero.

On the scale concerned with adopting children, the difference is insignificant. The two attitudes, self-reliance and use of corporal punishment, for which the greatest degree of immaturity was found in the college group showed significant gains.

Significant differences between initial and final mean scores in the experimental group for each of the knowledge tests were observed. These differences, with their standard errors of difference in gains, which ranged from 12.58 ± 8.94 on the topic related to adopting

children to $3.90 \pm .473$ on the scale related to praise may be considered significant since all are more than three times their standard error of difference in gains

8. In the attitude measurements for the control group, observed difference ranged from $10 \pm .146$ on corporal punishment scale to $.02 \pm .135$ on the scale related to the use of praise as a means of control. Observed changes in the control groups, therefore, may in all cases be accounted for by chance fluctuations. On the knowledge tests for the control group, none of the observed differences are greater than three times the standard error of gains. These differences on the knowledge tests range from $.47 \pm .374$ on the corporal punishment unit to $16 \pm .67$ on the self-expression unit.

9. To determine possible relationship which may exist between the learning of knowledge and the learning of attitudes, product-moment correlations between gains in knowledge and changes in attitude were determined. These results show low correlations which indicate a lack of relationship between gains in knowledge and changes toward maturity in attitude. Coefficient correlations for each of the several units are as follows: corporal punishment $.26 \pm .064$, praise $.218 \pm .069$, self-reliance $.193 \pm .069$, adopting children $.152 \pm .085$, fear $.10 \pm .07$, and self-expression $-.174 \pm .06$.

10. For the attitudes related to self-reliance and corporal punishment, students in the experimental group, when classified into upper and lower halves according to IQ scores, tended to make approximately equal scores on initial measurements, but on final measurements the higher level tended to show a slightly greater change. The differences, however, are less than three times their standard error.

11. In the remeasurement of forty-eight of the subjects in the experimental group two years after the administration of the learning program, the observed changes were less than three times their standard error. These remeasurements were made for the attitudes toward corporal punishment and self-reliance.

The remeasurement data are interesting. Other studies of the attitude toward development of self-reliance at the Iowa Child Welfare Research Station have shown that, under existing conditions and when carefully designed learning programs are not brought to bear upon the problem, an attitude slightly to the unfavorable side of the neutral point obtains. The data in this study show that not only can a significant shift in attitude be produced through carefully planned learning programs, but the change in attitude tends to have some permanency.

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PART THREE

THE EFFECT OF CERTAIN FACTORS IN THE
HOME ENVIRONMENT UPON CHILD
BEHAVIOR

by

Eva I. Grant

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THE EFFECT OF CERTAIN FACTORS IN THE HOME ENVIRONMENT UPON CHILD BEHAVIOR

One of the areas of influence in shaping the child's development is the home environment. Perhaps no single problem has been as interesting or as challenging as determining the relationship between various factors or conditions in the home environment and the behavior of the child. The importance of parent-child relationships has long been acknowledged and seriously considered by psychologists, sociologists, and mental hygienists. And since the family is the first group in which the child finds himself, it is not surprising that so many investigators have looked to the family as the key to the explanation of individual patterns of behavior, as the very core, so to speak, of human nature itself. The following quotations are examples of the ideas expressed most frequently in the literature dealing with the child in relation to the home environment.

"The family provides a matrix of response processes. It provides for the child a set of response patterns in terms of which all future responses will be judged" (10, p. 47)

"The chief responsibility for the child's personality development rests upon his parents because they exert the most profound determining effect upon him" (2, p. 473)

However, in view of the existing evidence we have today concerning the home environment, much more will have to be known about the home and many more factors will have to be isolated and experimented with before either the status or contribution of the home environment in relation to the influence and development of the child's personality can be determined.

There are perhaps two outstanding fallacies that have hindered definition of the home environment. First, the use of the term itself. It is clear that homes vary. We can no longer go on thinking of the home environment merely as "the home environment." Previous studies have indicated the complexity of familial experiences and it is neither feasible nor useful to use the term in generality. What we have are home environments and the influence of each must be defined.

A second fallacy in research has been that investigators have dealt

with the influence of formal factors in the home environment, such as social and economic status and sibling position, and have overlooked the factors which may really be important in determining the child's personality. The conclusions based on these studies have shown that these factors have little consonant and generalizable influence. It may be that the social and emotional relationships among members of the family circle are the factors that really count. It is true that these relationships are more difficult to measure. The intricacy encountered in dealing with the causes of human behavior and its interrelationships has made investigators fearful of attempting to discover and relate these specific relationships in the "human" environment with specific types of child behavior. Only recently have investigators hoped that the phenomenon of parental attitudes and procedures could be dissected and that definite causal relationships could be established between the home environment and the child.

PURPOSE OF THE STUDY

The purpose of this study is an attempt to relate certain internal factors in the home environment (both integrating and disintegrating) to specific behavior patterns of children of preschool age. In addition, an effort is made to point out that having discovered certain causal relationships and then effectual counterparts, by reconstructing the existent conditions in the home environment, certain behavior patterns exhibited by the child may be altered.

The methodology to be employed in the research of the "human environment" rather than the external environment consists of two general procedures. One is to determine the correlation between certain definite factors of personal relationships in the home environment and relate them to certain behavior patterns exhibited by children. Another is to change the conditions in the home environment. The former method is not advocated as the key to the discovery of absolute relationships but does yield some interesting and valuable leads, the latter gives more direct evidence. Both methods are used in this study.

HISTORY OF PREVIOUS STUDIES

In Roberts' (10) study observations were made directly in the home environment. Attention was centered upon the play materials used by children, their activities, and the control exercised by parents. She recorded the various phases of child play in the home environment on

a prepared form and tested the reliability of the observations by using two observers. Both correlational and experimental data tended to show that when a larger proportion of verbal controls giving the child a choice was used, co-operative activity on the part of the child increased. Decreasing the number of inconsistent commands and requests also increased co-operation. When the number and proportion of constructive play materials were increased, the amount of imaginative, dramatic, and constructive activity tended to increase. An increase in the amount of constructive play materials tended to decrease the number of occasions when commands or requests were used by parents, the amount of activity inhibited by parents, and the amount of emotional behavior on the part of the child.

In an effort to establish the relative importance of certain factors in the home environment with the development and adjustment of the child, Francis and Fillmore (3) made a study of 112 children representing sixty families living in two variegated areas of a midwestern city. They concluded that parental attitudes are more strictly related to the child's adjustment than are such external conditions as illness, foreign-born parents, split homes, and economic insecurity.

From a study of 100 only children referred to a child guidance clinic, Waid (11) also concluded that such disadvantages as economic conditions are not the most adverse factor pertaining to the development of the child's personality.

Fitz-Simons (2) classified 100 cases according to the indications of the parents' attitude of overprotection or rejection of the child and associated certain problems of children with the particular attitudes.

Hattwick (4) studied 335 children from eighteen different nursery schools in an attempt to relate specific home factors to thirty-five common types of child behavior. The behavior rating for each child was based on the average of three independent ratings by the preschool teachers. Ratings on the factors in the home environment were determined on the judgments of only one teacher. Tetrachoric correlations were used for comparative purposes. Hattwick concluded that over-protected children tend to show infantile withdrawing types of reaction, while children receiving insufficient attention in the home reveal aggressive types of behavior. This study also gives some evidence to show that a calm, happy home may produce co-operative behavior and good emotional adjustments on the part of the child. Homes in which there were signs of tension tended to make for unco-operative behavior and poor emotional adjustments. Hattwick further suggests

that development of self-reliance may be aided by children being given definite responsibilities in the home, and that sharing play experiences with parents is conducive to the development of emotional security. It must be remembered that the ratings of the home environment were based on the judgments of one teacher and tetrachoric correlations only were used.

In a later study Hattwick and Stowell (5) substantiate some of the conclusions referred to in the above study as to the effects of parental overprotection in relation to certain adjustments of children in the first six grades of school. Adler's (12) description of the only child presents a similar picture of the effects of overprotectiveness.

In a recent study dealing with the relationship of selected factors in the home environment and changes in school adjustment, Kirkendall (8) applied the Symonds Adjustment Questionnaire and the Sims Socio-Economic Scale to all pupils in a Junior-Senior High School, grades nine to twelve. For all these grades the teachers were asked to designate pupils whom they considered well adjusted or poorly adjusted. Since this study deals with the adolescent level, the procedure involved is not reviewed in detail. Although the evidence is not so inclusive as to warrant such a sweeping statement, Kirkendall, nevertheless, is of the opinion that by adolescence it seems that the previous environment has so firmly established habits of behavior that they tend to endure notwithstanding such changes "as occur in normal life."

THE METHOD

General Procedure

A group of thirty-three preschool children and the thirty families of these children served as subjects. A description of the home environment in terms of five selected characteristics of parental behavior was obtained by a modified and extended form of the interview procedure. On the basis of the data obtained each home environment was given a rating for each of five categories. These ratings were correlated with ratings of the behavior of the child prepared by three well-qualified observers each of whom had an opportunity to observe the child over a considerable period of time.

Upon analysis of these findings, experimental situations were set up in those home environments in which changes seemed most desirable and in which co-operation was secured in order to see whether by changing the parental behavior it would be possible to modify the

behavior of the child. An effort was made to change the parental behavior through a simple training program designed in the light of our present knowledge to bring about a modification of those parental characteristics which had correlated significantly with certain behavior characteristics of the child. After the training period was instituted and some time had elapsed for the suggested changes to have taken effect, the children were again rated by the same observers and these ratings were compared with their initial ratings in order to obtain the results of experimental training.

Subjects

The thirty-three children used as subjects were all enrolled in a recognized preschool. They ranged in age from two years, one month, to five years, six months, with the median at four years, five months. They were above the average in both physical and socio-economic status, coming mainly from homes where the father belonged either to the professional or business class. Only several could be assigned to the laboring class.

Definition of Categories Used in the Study

Categories Used in Describing and Rating Parental Behavior. In obtaining a description of parental behavior, attention was centered on five patterns or characteristics. These characteristics were carefully defined and a guide consisting of numerous specific questions was prepared for use in the interview. It was desired to sample the parental behavior and from specific instances to derive a summary expressed in the form of a rating on a 7 point scale. The reliability of this general procedure was tested in a limited area by Ackerley (1) and by Ojemann and Neil (9) and found reasonably satisfactory. The five characteristics for which ratings were obtained are defined as follows:

- 1 Parent excessively protects child vs definitely rejects child
This may be referred to as protection-rejection category
- 2 Parent uses a logical scientific approach vs parent uses illogical unscientific approach
Referred to subsequently as logical vs illogical approach
- 3 Parent encourages development and expression of ideas vs discourages development and expression of ideas
- 4 Parent fosters social development vs inhibits social development
- 5 Parent provides calm, happy home life vs parent provides home full of tension

In all categories a consistent attitude was required on the part of the parents. The investigator was aware of such disguises and defense mechanisms as compensation, idealization, and rationalization. That is, the structure of the behavior act was taken into strict account. For example, wherever the parent appeared to be very logical and scientific in her method and it was discovered by her remarks or by other indications which pointed to an unscientific, illogical approach in handling the child, the overt manifestations of her disguise were not considered and the parent was rated as illogical in her parental practices. The same reasoning applies to the other categories.

Category I In Category I, the home environment was given a rating of 1 if the parent was distinguished by such behavior as prolonging infantile care, excessive contact with the child, preventing development of the child's independence, or by either an excess or lack of control over the child, not permitting him to make any risks whatever so that he may learn how to remove difficulties. A rating of 7 was allotted that home environment where the parent felt little responsibility for the child, was indifferent to him, or actually resented and repulsed the child. A rating of 4 is an indication that the parent strives to achieve a neutral attitude, that the child is taught to perform tasks suitable to his age level, that the parent is not overconscientious and does not worry excessively about the child's safety and yet is not indifferent to his actual needs or does not fail to administer proper care of the child. Also a rating of 4 means that while there is no excessive contact with the child, he is not denied the affection and attention necessary to his development since the parent is aware of child's interests and satisfactions.

Illustrations of data obtained in the interview which determined the rating of the home environment in relation to Category I follow. The detailed list of questions used as a guide in the interview is given in the copy of the thesis on file at the University of Iowa library.

Home Environment Rating 1

Question If your child's tricycle is stuck in a crack, do you get it out for him or do you tell him how to get it out and let him do it himself?

Answer I get it out for him. He starts to cry and I can't stand to hear him cry. It upsets him and makes me feel sorry for him. I want to help him.

Question Suppose your child wakes up in the middle of the night and begins to cry, do you go to him immediately? What do you say?

Answer Yes, I do. I say, "Mummy is here, she'll take care of you."

Home Environment Rating 4

Question Do you plan everything at home with the child in mind?

Answer No (Then gives several illustrations indicating that the child is one of a number of things considered)

Question Do you refuse invitations because you don't like to leave your child in the care of the maid?

Answer No, not if I have a reliable maid who has proved trustworthy

Question Do you believe that being stern and cold to your child will aid him in being obedient and at the same time self-reliant?

Answer No, of course not He has to be tempered but I believe in being firm when the occasion demands, not cold and stern

Home Environment Rating 7

Question Do you ever simply ignore the child's apparent trouble and continue with your own work?

Answer Hm, most of the time

Question Suppose your child desired some toy which you could not afford without denying yourself something you needed, would you get it for him, would you explain the matter to him, or would you simply buy him something else?

Answer I wouldn't get it or anything else for him, nor would it do any good to explain to him He just has to play with what he has

Question Would you like to keep your child in a condition of babyhood as long as you possibly could?

Answer I should say not He can't grow up fast enough to suit me

Question Do you worry about whether your child brushes his teeth clean enough?

Answer No, I really don't know if he does or does not brush his teeth

Category II Logical vs Illogical Approach It is the writer's opinion that of all the parental characteristics measured, this pattern may be the most important in influencing the development of the child Perhaps we may make the assumption that those parents who make a genuine effort to guide their own behavior by reason rather than by emotion are more likely to be characterized by an open, progressive mind, one which is constantly putting forth effort to release itself from hasty, unverified generalizations, errors, and prejudices

A home environment was given a rating of 1 if the parent fostered self-reliance and responsibility in the child by practically and methodologically teaching him the routines of dressing, eating, sleeping, and toileting, if the parent assigned to the child tasks of reasonable but real difficulty, if the parent was relatively impartial in his attitude toward the child, answering his questions concerning the world and

himself and the relation between the two by frank answers and keeping the child's mind on the alert and open, and, finally, if the parent utilized consistent guidance and discipline in handling the child

A rating of 7 was assigned that home environment in which the child was not trained to be reasonably self-reliant nor responsible for his own needs, in which there was an inconsistency of discipline, and where the parent answered the child's questions concerning sex, nature, and God, not in generally accepted laws and theories known to exist, but in terms of prejudicial and conjectural opinions. Such a home environment makes little attempt to teach the child the ability to attack his own problems nor does it teach him how to invest them with any interest or vigor.

Rating 4 means that the parents themselves are still groping, sure of themselves and then procedures in certain situations and inconsistent and ignorant in others.

Category III Favors and Encourages Development and Expression of Ideas. Rating 1 was determined by such criteria as parental fostering of mental, musical, and mechanical activity through provision of adequate materials and situations evoking favorable responses, parental entrance into imaginative and constructive play with child and encouragement of further contemplation and action in the child by praising and appreciating his mental and emotional growth.

A rating of 7 on this category would mark a home environment in which the child's curiosity was not stimulated, where the parents made no effort to provide the child with rich and meaningful situations which in turn provide for his mental content, and where no assistance was given to clarify the child's ideas. Not only may a parent rating 7 fail to provide the child with stimulating experiences, but such a negative rating may be indicative of a parent who actually dulls or stifles the child's abilities by punishing him for destructiveness or discouraging him by lack of praise and even through ridicule, laughing at effort and criticizing child for his shortcomings, rather than praising him for what he has accomplished.

Category IV Fosters Social Development vs Inhibits Social Development. Relative to this category, rating a home environment as 1 involved the following considerations: first, the parent himself, his ability to provide an adequate example of desirable conduct. This requirement has been designated in the literature as being highly significant in guiding the child's development, for then the child has an opportunity to learn something of the meaning and significance of

intercourse with others. A second consideration is placing of emphasis upon the child's awareness of himself in relation to the group, the child being drawn into discussions concerning social welfare. And the third desideratum is the parental effort in providing successful social opportunities to insure the child a certain amount of success in social situations so that he may be stimulated to further social participation.

A home environment rating 7 would be considered as an indication that the parents extend little effort to provide the child with a locale where he may have experience in the process of accommodation, in other words, where few or no provisions are made to acquaint the child with the world outside of his immediate home environment so that he lacks opportunity to practice the techniques essential for fundamental adjustments. Many homes in which there is a variety of social situations were nevertheless rated 6 or 7 because these situations in which the child was found were of such a nature as to be entirely too advanced for his particular stage of development. He either failed in them completely or experienced discouragement with the consequence of withdrawal from later social situations.

It is obvious that homes in which the parents themselves were totally lacking in social consciousness, never participating or contributing to society, were considered as extremely negative to social development.

Category V Calm, Happy Home Life vs Home Filled with Tension
Several indices were used as indicators for this study. A home environment rating positively was defined as relatively free from tension if the parents themselves were emotionally stable and secure, that is, if they seemed to be adequately adjusted to life, having discarded infantile habits of behavior and having accepted the role of maturity. A calm, happy home life was further characterized by parental harmony, co-operative feelings, mutual understanding and affection, in other words, mental and physical compatibility between parents which produced intimate feelings of appreciation and sympathetic responsiveness to the children in the family.

Home environments rating 7 included such points of reference as the following: projection of parental ambitions upon children, preferential attitudes toward child, interference in the form of in-laws living in the home environment or close by, and underlying these, a lack of harmonious relationships between the parents.

Classification of Children's Behavior

Eleven patterns covering a considerable range of behavior were studied. They include plays with group *vs* withdraws from group, self-reliant behavior *vs* dependent behavior, ascendancy *vs* submissiveness, selfish behavior *vs* unselfish behavior, sadistic behavior *vs* absence of sadistic behavior, nervous habits *vs* relative absence of nervous habits, security *vs* insecurity, co-operative *vs* resistant behavior, perseverance *vs* lack of perseverance, and responsibility *vs* irresponsibility.

Each designated classification carries certain implications which are mentioned so that the reader will be more certain of the qualities inherent in each behavior pattern. The writer is aware of the lack of fineness in this classification but the intention was not to create a complete rating scale, but rather to restrict attention to a selected group of behavior patterns and define each.

Plays with Group vs Withdraws from Group Children were considered as being adjusted to group activity who were able to engage easily in group activity of their own accord, desiring and inviting other children to play, and in general contributing to the group as a social being.

Withdrawal from group was gauged by child's preference for solitary play, indifference, animosity, or apathetic attitude toward other children. In other words, as a rule making no effort at group participation and in general making no contribution to group participation.

Self-Reliance vs. Dependent Behavior A child was classified as self-reliant, who, relative to his age level, was capable of performing such routines as dressing and undressing, eating, sleeping, and toileting, who possessed the ability to act on his own initiative and to settle difficulties without appealing for unnecessary adult aid.

The dependent child, on the other hand, is one who is unable to perform the above mentioned procedures independently and who has to appeal to teacher for aid in settling minor difficulties.

Ascendancy vs Submissiveness Jack's (7) definition of ascendant-submissive behavior was used as an index in rating this behavior pattern.

Selfish vs Unselfish Behavior. Selfishness was identified by a child's refusal to share possessions with other children, refusal to consider sug-

gestions of others, believing self always to be in the right, self-centered, monopolizing toys, insisting upon own choice of story, song, or plan, and indifferent to rights of others

Such characteristics as a child's willingness to share belongings with other children, and the disregarding or subduing of own desires to consider and accomodate those of other children, were used as indices of unselfish behavior

Sadistic Behavior vs Absence of Sadistic Behavior A child was rated as being sadistic who teased children or adults deliberately to annoy them, laughed or was indifferent to distress of others, mistreated animals, and bullied, pushed, intimidated, kicked, or frightened children, delighting in their discomfiture

Omission of certain reactions was also used as an indication of sadistic tendencies. That is, wherever a response should have been forthcoming (as, for example, child falling off swing and being in need of help, and another child merely standing by and doing absolutely nothing), the omission was rated as a controlled sadistic tendency

Nervous Habits vs Relative Absence of Nervous Habits A child who revealed either several or many of the following patterns to a marked degree was rated as possessing nervous habits: thumb sucking, nail biting, fears, enuresis, masturbation, excitability (crying, laughing excessively or unnecessarily), speech defects, and distractability

Any child in whose behavior the above mentioned patterns were relatively absent was rated as being free from nervous habits

The term "relatively" is used to denote that many patterns such as thumb sucking, nail biting, and so on are normal infantile reactions which are eliminated with increasing age. It is only where these habits persisted past a defined age level and were noticeable to a marked degree that they were considered as nervous habits

Security vs Insecurity A child was classified as being secure whose behavior was characterized by self-assertiveness without too great forwardness or presumptuousness. Also a child was classified as secure who seemed sure of himself and attacked his problems with ease and lack of excess emotionality

Insecurity was detected by such behavior as the child shrinking, cringing, or crying in the presence of others, tendency to be easily humiliated, withdrawal from group, and state of apprehensiveness or fearfulness. Some children manifest insecurity by being disobedient, re-

senting discipline or correction, and being generally uncontrollable. These compensatory patterns may be considered due to insecurity.

Resourcefulness vs Lack of Resourcefulness The following behavior acts were used as indices of resourcefulness: child's ability to show finesse, aptitude in seizing upon new relations, and energetically and discriminatingly making use of his powers. The resourceful child is one who shows his interest in story or discussion by being able to ask relevant questions pertaining to story and contributing to discussion by relating personal experiences. He is also resourceful if he is interested in his environment and asks for information concerning it, also, if he tirelessly and ingeniously explores the environment.

Lack of resourcefulness distinguishes the child who when play apparatus has broken down, stands around waiting for someone to help him or suggest another activity for him, or still further, when faced with any problem finds no way of attacking it.

Co-operative vs Resistant Behavior In measuring co-operative behavior such reactions as the following were considered: the child's ability to get along in the group, working in the group toward group objectives, interest and consideration for other children which in turn involves sharing possessions and ideas with them, and aiding them when help is desired. Perhaps we may say that the constituent element looked for in co-operativeness, was the child's ability to contribute something to the group as well as to extract from the group.

Resistant behavior was easily discerned by the child's acting contrary to teachers' suggestions, refusing to comply in routine situations, and bossing and disturbing other children.

Perseverance vs Lack of Perseverance Rating of perseverance includes the child's ability to concentrate on one activity over a period of time, that is, continuing an activity to his own satisfaction, carrying problem or activity through in the face of discouragement or obstacles. The term is used here as persisting in a desirable direction rather than merely remonstrating or opposing authority.

The child lacking perseverance is marked by wasting time (dawdling) at routines, and leaving tasks incomplete.

Responsibility vs Inresponsibility The indices used in measuring responsibility were as follows: child's trustworthiness as well as his ability to perform such tasks as taking off his wraps, hanging them where they belong, going to the toilet by himself, getting his rug for

rest period, and other matters of routine. Further, the child's respect for the property of other children, ability to think things out for himself, awareness that he is held answerable for certain conduct and for certain obligations determined his rating as to responsibility.

The irresponsible child was detected by his untrustworthiness in maintaining certain required conditions, or by his failure to accomplish his share of the work or to assume certain obligations. Such a child is unaware that as part of the group he is answerable for certain conditions and requirements. He tends to make excuses or alibis for his behavior.

Reliability of Children's Ratings

The reliability of the ratings of child behavior was determined by correlating rater 1 with rater 2, rater 1 with rater 3, and rater 2 with rater 3. Since the children were accustomed to having the teachers around and were unaware of the fact that they were being observed, the writer believes that a fairly typical sample of behavior was obtained. (Table 1)

Procedure in Interview with Parents

Most of the data were obtained from the mother. Whenever the interview with the mother seemed to indicate that she was not familiar with the situation, or gave evidence of uncertainty, the father was also consulted. The duration of time of the interview was from two to two and one-half hours and in several cases even longer.

The investigator tried to make the interview as informal as possible so that there would be a certain amount of free association as well as

Table 1
Reliability of Ratings of Child Behavior

Pattern	Raters		
	1 and 2	1 and 3	2 and 3
1 Seeks group or withdraws from group	83 \pm 03	84 \pm 03	81 \pm 04
2 Self-reliant <i>vs</i> dependent behavior	80 \pm 04	78 \pm 05	78 \pm 04
3 Ascendancy <i>vs</i> submissiveness	78 \pm 05	77 \pm 05	76 \pm 05
4 Selfish <i>vs</i> unselfish behavior	79 \pm 04	76 \pm 05	80 \pm 04
5 Sadistic <i>vs</i> lack of sadistic behavior	71 \pm 06	69 \pm 06	71 \pm 06
6 Nervous habits <i>vs</i> relative lack of nervous habits	81 \pm 04	83 \pm 03	81 \pm 04
7 Security <i>vs</i> insecurity	80 \pm 04	79 \pm 04	77 \pm 04
8 Resourcefulness <i>vs</i> lack of resourcefulness	82 \pm 04	78 \pm 04	78 \pm 04
9 Perseverance <i>vs</i> lack of perseverance	82 \pm 04	82 \pm 04	62 \pm 04
10 Co-operative <i>vs</i> resistant behavior	80 \pm 04	78 \pm 04	80 \pm 04
11 Responsibility <i>vs</i> irresponsibility	81 \pm 04	78 \pm 04	77 \pm 05

descriptive answers to specific questions. In most cases very little expenditure of effort was needed to establish rapport with the parents who seemed only too eager to discuss their personal problems, especially with one who they felt was psychologically trained at least to listen. They yielded not only answers to the specific items of the questionnaire, but volunteered information concerning the most intimate familiar relationships. It seemed as if the parents sensed a silent understanding between themselves and the investigator, consoling themselves with the thought that after all they are supposed to be just a case study buried in the files somewhere, their identities completely submerged in scientific data. The only difficulty the investigator experienced was in directing the parent's attention to the next question instead of allowing them to elaborate at great length on certain factors in their own familial pattern. They also wished the investigator to act in a psychiatric capacity, every now and then turning to her for verification or an immediate prescribed solution for their difficulties. The writer was interested in the fact that after the interview, several parents made the following remark: "You know a great deal about me now, don't you?" Other parents commented to the director of the preschool saying, "I'm afraid to see the writer again. She knows more about me than anyone else."

Treatment of Data

Most of the comparisons are based on Pearson product moment correlations. In interpreting these results in accordance with statistical procedures, any correlation greater than four times its probable error has been considered statistically significant. In other words, when any correlation is greater than four times its probable error the assumption can be made that it is practically certain that all of that correlation cannot be accounted for by chance, that there must be some relationship in the direction indicated by the correlation.

According to Holzinger's tables (6) a correlation coefficient of .40 (P.E. \pm .08) is the lowest correlation obtained from comparing thirty-three cases which will satisfy the requirements stated above. Therefore, any coefficients of .40 or greater are considered statistically significant. Very little consideration has been accorded a correlation lower than .40 since we are not certain that a relationship does exist.

However, several correlations were obtained that on a scatterdiagram revealed a distinctly nonrectilinear relationship. In these cases the

use of the Pearson product moment is not valid because it is based on the assumption that the relationship is rectilinear. Therefore, to determine the degree of relationship between these variables, a correlation ratio was obtained in order to discern a true picture of the existing relationship. All scatterdiagrams were inspected and those giving a hint of curvilinearity were tested for linearity.

ANALYSIS OF DATA BY CORRELATIONAL PROCEDURE

In describing the general procedure, it was indicated that five characteristics of parental behavior were studied. The ratings of parental behavior were correlated with the ratings of certain types of child behavior patterns. Here the data are analyzed in order to determine the nature and extent to which parental factors in the home environment correlate with the behavior of the child. The data are given in tabular form and analysis of data follows each tabulation. The extremely low correlations have been deleted.

Correlation of Child Behavior with Protection vs. Rejection

The following tabulation presents the relationships between protection vs. rejection in the home and behavior characteristics of children as found in this study.

Child Behavior Patterns	Correlation
Nervous habits	.73 ^r
Security	— .63*
Sadistic	— .56 ± .08
Seeks and plays with group	— .54 ± .08
Ascendancy	— .53 ± .08
Self-reliance	— .43 ± .09
Responsibility	— .36 ± .10
Perseverance	— .30 ± .11
Co-operativeness	.24 ± .11
Selfishness	.18 ± .11
Resourcefulness	.12 ± .11

*Curvilinear

On the basis of these correlations it is seen that excessively protected children tend to avoid seeking and playing with the group while rejected children tend to seek the group. The tabulation also reveals that even when they enter into the group, overprotected children tend to be submissive. From an analysis of the comments made by the observers who rated the children, it was learned that the submissiveness of the overprotected child may take one of two forms: extreme docility, or a refusal to do his share of group activity, motivated in turn by an inability to assume responsibility. The ascendancy of the

rejected child was characterized by rather distinctly aggressive tendencies such as bullying, quarreling, and showing off, even if it meant using physical force such as shoving, grabbing toys, and pushing. Children with such characteristics seemed less able to compromise, less able to use subtle techniques in gaining dominance seeking rather to attain their own ends at all costs and stubbornly refusing to comply with the demands of others in the group. Concomitant with these aggressive tendencies a positive relationship with sadistic tendencies was found. From the writer's knowledge of the patterns of the parental behavior, the sadism exhibited by the rejected child may be due to one of two factors: either the child, because of having himself experienced repulsion, compensates by hurting someone or something else (the writer is thinking of two children in particular, one who squeezed a rabbit to death and another who delighted in shoving children against a hot radiator) as an outlet for the emotion of anger which the repulsion may have stimulated, or secondly, he may, due to lack of actual education and experience, be sadistic, not knowing what it is to experience sympathy, affection, or compassion. He may think that such behavior patterns as he is subjected to are natural. It is perhaps worthwhile to emphasize that where rejection actually takes the form of physical repulsion we may find the child constantly on the defensive, uncertain of the adult's reactions.

A plausible explanation for these relationships may perhaps be that the overprotected child does not feel the need for companionship and identity with the group for he is already too strongly attached to and identified with the home. And even when he does enter the group his submissiveness may be explained either by the fact that he is not primarily interested in the group or that he is submissive simply because of excessive maternal control which leaves him ignorant of how to be independent. Furthermore, the overprotected child is more concerned with receiving attention from the adults present, since his satisfactions are derived from association with adults. Therefore, he runs after the teacher or mother, whining, clinging to her garments, crying, and manifesting other infantile traits designed to direct attention to himself. In several cases when all the artifices to gain attention failed, the child learned to surrender and became more co-operative. That is, he found that in doing what was expected of him, he gained the adult attention and praise on which he had thrived so well at home.

The rejected child, on the other hand, because he does not derive enough satisfaction from the home, because he is not pampered, petted,

or praised enough, tends to seek an opportunity to exert his ego outside of his home environment. He attempts to find a substitute source for recognition and forces himself upon the group. The word "recognition" would thus seem to be an important clue to the aggressiveness of the rejected child, since being recognized by a group and possessing a feeling of belonging to a group are entirely two different things. One can be recognized by a group without feeling any security as a member of this group. The results of such insecurity will be brought out more distinctly further on. The rejected child, then, may actually gain all the attention he is seeking in order to justify himself.

However, these substitute devices either of the rejected child in dominating the group or of the overprotected child in withdrawing from the group, even though inwardly he would like to participate, do not remedy the underlying personal maladjustments, as is borne out from further examination of the tabulation (p. 77). Both extremely protected and extremely rejected children tend to show more nervous habits and a greater feeling of insecurity. This may be significant since it points out that the maladjustment is exacting its toll in strain upon the total personality of the child. In this regard it is significant that though both types are characterized by nervous mannerisms and insecurity, the overt manifestations of the behavior are often different. The nervous habits of the overprotected child are a reversion to infantile habits such as thumb sucking, finger sucking, temper tantrums, fears, excessive whining, and crying, while the rejected child, as we said before, is constantly on the defensive. His body stiffens, he may become sullen and sulky or grumble and frown. He may be easily humiliated, may fly into a silent rage exhibiting restlessness, jerky body movements. Enuresis, masturbation, and stuttering are involved in both these types.

It is perhaps important to analyze further the plausible reasons for nervousness and insecurity. We discern from the previous tabulation that the overprotected child tends to lack security. A plausible reason for this may be as follows. How can a child whose every whim is catered to, whose infantile characteristics are being prolonged by excessive care and contact with the parent, learn to do things for himself when he has always had everything done for him? When he is placed in an environment which requires independence and self-reliance, he is at a disadvantage. His method of attacking the situation is to seek someone in this new environment whom he can identify with the parents who provided satisfaction for him in the beginning. When he fails,

he is at a loss to know how to adapt himself. His infantile patterns failing, he can only accentuate them, make them so intense that sooner or later the adult will submit to him. Or he might simply surrender into undue obedience without deriving any understanding or satisfaction from the behavior.

The rejected child tends to be insecure perhaps because he is suspicious of the fundamental sincerity or the purpose of the group in which he finds himself. We must not lose sight of the fact that children may react even more quickly to our inner attitudes and to the undercurrents which are set in motion where emotions are involved. The rejected child, constantly being thwarted and denied, may find overt patterns for covering up his deficiency and hunger for affection and attention, but underlying these patterns we find frustration, tension, and a sense of inferiority which engenders insecurity. A common defense for insecurity and inferiority in the adult as well as in the child is negativism, a stubborn refusal to comply to social demands, often accompanied by sadistic behavior. The rejected child in defense becomes wary, rebuffing anyone who does want to give him understanding and affection.

Correlation of Child Behavior with Logical Scientific Approach vs. Illogical Scientific Approach

The data in this study give evidence which tends to indicate that four types of behavior are fostered by the parent's logical pragmatic approach to the behavior of their children: self-reliance, responsibility, resourcefulness, and perseverance. There tends to be a negative relationship between nervous habits and a logical parental approach.

From the time the child is brought into the world, the aim and guiding task of parents and educators is to conduct the child from dependency and irresponsibility to independent adaptability.

From a study of the following tabulation we see that the logical

Child Behavior Patterns	Correlations
Self-reliance	57 \pm 08
Resourcefulness	52 \pm 09
Responsibility	49 \pm 09
Perseverance	45 \pm 09
Nervous habits	— 40 \pm 10
Co-operativeness	35 \pm 10
Sadism	11 \pm 12

method of approaching the child has in a measure been successful in

guiding the subjects of this study toward the practical goals of childhood education, it has tended to produce in the child such types of behavior as self-reliance, sense of responsibility, and perseverance—behavior which may enable him to face reality and cope with it

Upon analysis it appears to the writer that perhaps the two most outstanding characteristics of the logical scientific method which produced the above mentioned results are consistency and an attempt at an understanding of causal relationships. That is, the child must learn to perform simple routines, and he seems to learn them more easily if he is not forced to perform these acts by arbitrary assertion of parental authority. Also, it would seem that the child has more difficulty in learning to be obedient if a rule that is enforced today by the parent is broken tomorrow by the child's teasing or temper tantrums. And, too, whenever the child is given to understand the reason for certain things, there can be little conflict of fundamental desires between parent and child. From the data we find that this conflict may be eliminated by giving the child an opportunity to exercise a certain choice in the matters which pertain to him. If a child is part of every act, if it initiates from him as well as being merely carried out by him, he may be able to perform the act more easily. From still further examination of the data, we find that parents who are consistent in their procedures, whose demands upon the child do not greatly exceed his capacities at the moment, who in other words themselves possess the techniques involved in a logical approach to the problems of their children, train children who are better able to perform the routines which make up their early regime. These children tend to be more self-reliant, responsible, and persevering, as reference to the correlation in the preceding tabulation will indicate.

From the mother's observations we find that many children, as soon as they begin to reason, become prolific questioners, asking the same questions again and again. From the data there is some indication that those parents who are tenacious in directing and shaping the child's ideas, who are vigilant in giving him their attention, in showing him new relations—these children scored a higher rating on self-reliance and resourcefulness. Those parents who attempted to answer their children's questions concerning God, nature, and sex, and the like, in as simple but exact way tended to encourage in their children and foster in them techniques consisting of habits of analysis gained through practice with actual problem-solving. From the data gathered in the interview there is some indication that these parents did not stop with

the questions the child put before them but tried to push observation of the child further stimulating in him a sense of enthusiasm for discovery and the satisfaction derived from an interrelatedness of things they have observed

In analyzing resourcefulness further it was found that those parents who themselves manifested a desire for truth and an impartial attitude, who stressed the fact that knowledge was a dynamic concept tended to instill in their children the nucleus of intellectual curiosity and a technique for attacking their problems. These children seemed easier to reason with, asked more questions desiring to know how certain things happened and why, revealed more curiosity about places which they had seen or heard about, were more able to contribute to a discussion by relating certain of their own experiences, revealed a sustained interest in discussion and seemed to possess a certain amount of ability in recognizing inappropriate or irrelevant remarks made by other children during the discussion

Correlation of Child Behavior which Encourages Development and Expression of Ideas vs Discourages Development and Expression of Ideas

According to the following tabulation the children in this study whose parents encourage development and expression of ideas tended to show a fairly high degree of resourcefulness, self-reliance, perseverance, and co-operativeness

Child Behavior Patterns	Correlations
Resourcefulness	60 \pm 08
Co-operativeness	50 \pm 09
Perseverance	42 \pm 10
Self-reliance	40 \pm 10
Responsibility	39 \pm 10
Nervousness	- 37 \pm 10
Sadism	- 17 \pm 11

In thinking through all the significant data revealed by the parents, it was found that in those homes where the parents and children share experiences in common, where the child is supplied with materials which will stimulate and provoke him to activity, the child shows a tendency to be more aware of and interested in his environment and more resourceful in interpreting his experiences. For example, in those homes where the child is allowed to take the clock apart without his activity being looked upon as mere destructiveness or negativism, he seems to show mechanical and more manipulative ability. Also, those

parents who share in the child's imaginative play, as indicated by such question as, "Suppose you come home and find your child has built a room of blocks across the living room and says that where he is standing is water, what do you do?" as well as allowing the child to share in many of the experiences satisfying to the adult, seem to widen the expanse of the child's environment and stimulate resourcefulness. It is also interesting to note that those children who had an opportunity to hear music and were taught early if not to keep time, to recognize an air, seem according to the observer's comments more eager for the music period and more interested in it. In this connection, the data also seem to indicate that those children who were encouraged in the use of mechanical projects and allowed the use of various tools, were the better able to handle manipulative and constructive play materials. It was most interesting to the writer to hear many parents enumerate and evaluate various materials with which they provided their children, from boards, puzzles, clay, paints, and the like.

It was interesting to detect the positive relationship existing between the parents' realization that ideas and experience are necessary to one's interpretation of life and the influence this may have upon the child's awareness of the world about him.

From further analysis of the data we find that children whose parents enter into various kinds of imaginative play with them according to the ratee's observations do not usually stand around waiting for someone to suggest an activity for them, but show ingenuity in making up new games, or, when play apparatus such as, for example, swings or tricycles have broken down, usually make an attempt to fix them.

It seems that those parents who are able to inject a certain zest into the most simple, but what to the child may be the most interesting activities, such as watching a man dig a ditch, watching the monkeys perform in the zoo, working out a puzzle or form board, etc., tend to stimulate creative ability in their children and lend vividness to their already half-formed concepts. A mother told the writer that although she had been to the zoo many times, she had neither observed as keenly nor enjoyed herself as thoroughly as when her child was old enough to be taken to the zoo. It is a source of amazement to the writer to realize just how ingenious children may be with a little direction, how cleverly they may construct things and even more significant, the questions they can ask, the answers to which have been and still are being deliberated upon by scholars in many fields.

*Correlation of Child Behavior which Fosters Social Development vs
Inhibits Social Development*

The material given below tends to show that the children in this

Child Behavior Patterns	Correlations
Play, with group	64 \pm 07
Co-operativeness	55 \pm 08
Ascendancy	54 \pm 08
Sadism	-53 \pm 08
Responsibility	47 \pm 09
Selfishness	-44 \pm 09
Nervous habits	-39 \pm 10
Security	37 \pm 10

study whose parents foster social development tend to play more with the group, tend to be ascendant, and tend to co-operate and assume a certain type of responsibility. There is a negative correlation between sadism, selfishness, and "fosters social development."

From the writer's observations, it would seem that one of the fundamental requirements in fostering social development is the social adaptability of the parents themselves, and secondly, the provision of opportunity for social development outside of the home itself. It was interesting to the investigator to note that where children have been taught not to ridicule other children or discriminate between race or creed, one tends to find more understanding and sympathy revealed by the children. Several cases in particular come to mind of children from such environments who not only avoided teasing and taunting other children but seemed to assume a certain responsibility for these children who were being teased or taunted. It was not even unusual for a child to take another child under his wing, as it were, especially a child new to the group and initiate him into the routine. Perhaps one of the most gratifying experiences the writer had was listening to one child tell another, "We hang our wraps here and we always put our toys away when we are through playing with them!"

In addition to the parent setting an example of kindness and co-operation, acting as a wholesome guide, neither losing his patience and flying into rages nor speaking disparagingly of neighbors or friends, we find from close scrutiny of the data several other factors important in socializing the child.

Pets seem to be valuable in developing social values. Perhaps a plausible explanation for this fact may be that the welfare and perhaps existence of something the child loves dearly can so easily be

made to depend upon his behavior towards it, the responsibility he assumes for it, and the tenderness he shows for it

When children in the same family or simply playmates participate together in an activity, hardly a moment passes without its opportunity and demands upon the child for social rather than egocentric behavior¹. The egocentric inclinations of the child tend, if the relationship is a mutual one, to become restrained

Correlation of Child Behavior with Calm, Happy Home Life vs Home Full of Tension

An analysis of the following data indicates that several types of

Child Behavior Patterns	Correlations
Security	64 \pm 07
Nervous habits	-61 \pm 07
Plays with group	54 \pm 08
Sadism	-49 \pm 09
Co-operativeness	44 \pm 09
Selfishness	-37 \pm 10
Self-reliance	23 \pm 11
Responsibility	21 \pm 11
Perseverance	09 \pm 12

behavior are related to a calm, happy home life—a desire to play with the group, co-operativeness, and a sense of security. There is a decidedly negative relationship between nervous habits, sadistic behavior, and a home void of tension.

These data give some interesting evidence to show that defects in the family constellation, due to lack of harmonious relations between parents in the form of relatives and so on, may have an undesirable effect upon the personality of the growing child. It is not so difficult to detect obvious disorders but in the home there are situations which are less obvious and which tend to occur as frequently in families of high economic and cultural status as in the lower class. These less obvious difficulties including problems of interparental incompatibility seem to generate the feeling of insecurity in the child which in turn may effect his emotional stability. It seems that one of the most discouraging aspects in the treatment of conduct disorders is based upon the fact that the personality deviation in the child is often based on a much more deeply entrenched personality deviation in the parent or parents.

¹From observations of the children involved in this study, it was definitely seen that socialized speech can be detected long before seven years. This is contrary to Piaget's suggestion.

According to the interview it may be seen that parents who themselves are still groping toward maturity exhibit such infantile characteristics as losing their own temper in any trying situation, refusing the child's wishes without his knowing why, being lax with the child one day and strict with him the next, and in general tending to excite the children by the ambivalence of their own feelings and emotional maladjustments. Children of this type of home may reveal such nervous patterns as nail biting, nose picking, enuresis, speech defects, and masturbation. Several children were pointed out by the observers as seeming constantly anxious and fearful. They were described by the raters as being erratic and jumpy, irritable and given to outbursts of temper tantrums and frequent crying. It was evident from the data that these children may be divided into two groups: those who try to make some substitute adjustment for the lack of recognition or security in the home and those who are completely baffled, with the result that they are constantly emotionally stirred up to the conflicts that they cannot resolve. It was somewhat surprising to the investigator to find so many children who, loving their parents, cannot feel secure in the possession of their affections. This may perhaps be due to the results of parental effusion of love at one time for the child and harshness at another, preferential attitudes toward children in the same family and so on. Many adults cannot adjust themselves to such erratic behavior in those whom they love. How much more difficult it must be for a child to understand why at one moment he is kissed and praised and the next moment ignored and repulsed. A common type of defense mechanism for this form of insecurity as seen in the children studied may be negativistic behavior and a refusal to comply with social demands. The reasons underlying this negativistic behavior are not difficult to understand for if a child doesn't feel that he is a welcome member of the family it may be difficult for him to become a welcome member of any group outside the radius of the family. Or if he cannot feel secure in his own home, how much more difficult it is for him to cover up his insecurity by various behavior patterns which take years to acquire!

EXPERIMENTAL STUDIES OF INDIVIDUAL CHILDREN

In the description of the general procedure it was indicated that the correlational analyses are looked upon as giving hints of possible relationships and that final tests of causal relationships are derived

from experimental studies, that is, studies in which a known change is made under known conditions. Measurements are taken both before and following the change.

An adaptation of the experimental procedure was attempted in this study. These sample studies of individual children are offered as a possible part of a larger program. Home environments vary with respect to many factors. Ultimately there must be many cases of given types of children in given types of home environments. A rating of the child and the home environment was first obtained. Then a change was made in the home environment, some time allowed for the change to become effective, and a second rating of the child's behavior obtained.

The procedure followed in describing these individual studies is as follows: first, a brief characterization of the child involved, second, a brief description of the salient features in the home environment, third, the suggestions incorporated in the training period, and fourth, a brief summary of the child's readjustment. In outlining the changes attempted in each particular case, only the essential features are emphasized rather than the detailed suggestions.

Each report is accompanied by a tabulation showing the ratings of the child before the experimental training was instituted and the ratings following the change, so that the reader may gauge the results of the training. The ratings preceding training and following training were made by the same observers. Ten children were used in this part of the study. Below are given descriptions of the procedures and results obtained in three typical cases. The full report of all cases may be found in the thesis on file at the University of Iowa library. Outstanding changes in personality ratings were secured on all subjects.

Child C

C seldom approached the group or revealed much interest in other children. He resisted attempts to be led into group activity but preferred rather to be alone, apart from the group. His behavior, as rated by the observers, was characterized by nervous habits, such as thumb sucking and masturbation, and in general revealed a nervousness that seemed based on anxiety and tenseness. He was loathe to leave his mother when she brought him into the preschool and clung to her skirts, crying after she left. During the music period, the teacher had constantly to urge the child to participate in the singing, dancing, and games, thus he finally did with a great deal of resistant behavior, his face registering little emotion other than sullenness.

Interview with the father revealed that Mr. M was an Army officer and a strict disciplinarian. He entered a military academy at twelve and lived under

strict military regime. Mrs. M had been raised by a step-mother whom she hated, but she wouldn't leave home because of her devotion to her father. Mrs. M had had a desultory education including two years in a music conservatory. She finally married Mr. M who was much older than she, a widower with grown-up children and several grandchildren. Mrs. M told the interviewer that her husband was so kind, that they both "enjoyed Wagnerian music", that she married Mr. M to escape from a home which was becoming unbearable with her step-mother's constant nagging and accusations of immorality. When Mr. M was fifty-five, C was born and Mrs. M decided to give him all the love and attention which she herself had been denied. However, since she was in her late thirties when C was born, she said she felt awkward when playing with the child and soon gave up, leaving him to his own devices.

For Mr. M, C's birth was an anti-climax. He had no wish for any more children and a child in the house only disturbed his orderly regime. However, he assumed great responsibility in trying to make a real soldier out of his son and, according to Mrs. M, whipped him almost every night on the slightest provocation. Mrs. M told the interviewer that C's verbal response after being whipped usually was, "I don't like you. I like my mother", but she hastily added, "he probably forgets all about it in the morning."

Mrs. M seemed to be aware at the time of the interview that C wasn't developing quite as he should, but added that alone she was quite helpless. She indicated that she would appreciate any efforts on the part of the investigator to help her.

An interview with Mr. M was arranged and a promise exacted from him not to whip C for at least two months. Mr. M was judged by the interviewer to be a man of narrow outlook, probably induced by limited circumstances. The investigator informed Mr. M that while his basic idea in trying to make a "man" out of C was good, he might better accomplish this by punishing him, if he really deserved it, in some other way than corporal punishment, perhaps by isolation or deprivation. It was suggested that he also issue fewer demands and provide C with constructive material which would interest and stimulate him so that he wouldn't have to irritate his parents by objectionable conduct as a means of releasing energy. What C needed, it was suggested, was uniform gentleness and affection so that like qualities might be evoked in him. The parents agreed to be consistent in their attitude toward C and to enter his life in a positive rather than negative relationship. The interviewer also suggested that more social situations be provided for C. Mr. M was at loss to understand why his son didn't like music when he had such ample opportunity to listen to it at home. To this the investigator replied that it is not enough to have opportunity. It is essential to "feel it," and in this the child must be guided. Several books dealing with principles of child development were suggested to Mrs. M.

After seven weeks Mrs. M reported that C was at first suspicious of his father's advances and repulsed them, but rapport was established between father and son through a construction set which Mr. M had provided for the child. The father had also taken C to the zoo several times and both father and C had seemed to enjoy the excursion. Mrs. M related the following incident to the investigator. One night before C's bedtime he was sitting near his father

who was reading the evening paper. In getting up, C knocked over his father's ash tray. The father looked up, showing none of his usual irritation. Before C went to bed, he said to his mother, "Daddy forgot to whip me and I spilled the ash tray!"

After seven weeks of following the suggested changes, the raters observed that many of C's nervous habits were beginning to disappear and that he was losing much of his negativistic behavior and was more co-operative as well as self-reliant. During the story hour he began to speak of things that his father and he had done. One day after he had been to the zoo he asked the teacher if he couldn't tell the children about the monkey show he had seen. The children themselves began to take more of an interest in C.

The detailed data for these findings follow:

Behavior Patterns	First Rating	Second Rating ¹
Plays with group	7	4
Self-reliance	5	3
Ascendancy	5	3
Selfishness	4	Same
Sadism	3	4
Nervous habits	3	6
Security	6	4
Resourcefulness	6	4
Co-operativeness	7	4
Perseverance	6	5
Responsibility	4	Same

¹Seven weeks after first rating

Ratings of Home Environment

Category	Rating	Remarks
Protection <i>vs</i> rejection	2	Changes
Logical <i>vs</i> illogical approach	7	involved
Encourages <i>vs</i> discourages development and expression of ideas	6	training
Fosters <i>vs</i> inhibits social development	6	in logical
Calm, happy home life <i>vs</i> unhappy home life	4	scientific approach

Child L

L was the object of much teasing and taunting. Whenever he carried his tray he spilled something. He couldn't even carry his food to his mouth easily. The observers noted that he couldn't make a whistle during constructive activity period nor was he able to beat time or march to music. Whenever he began to say something, he stuttered and the other children laughed at him. L's reaction to this was crying and he developed a chronic runny nose which he didn't bother to wipe but annoyed the children and adults with it. He was rated by the observers as being insecure, unself-reliant, and lacking resourcefulness or perseverance.

During the interview it was learned that both L's father and mother were deeply disappointed in him and were constantly referring to his clumsiness. His inadequacy was a constant source of humiliation to them. L's brothers and sisters mocked his stuttering and otherwise paid little or no attention to him.

When L was first entered in the pre-school, a testing program was in session. L's father called upon the Director to find out his child's IQ and was keenly disappointed when the Director told him it was against the policy of the school to divulge the IQ's of the children. His first question to the Director had been, "Is my child a genius?" During the interview L's mother told the investigator that L's father had received a blow when informed of L's problems in the pre-school. He simply could not understand why L should have any difficulty when his other children, of whom he was very proud, had always been so bright.

The parents were both informed by the investigator that although L was not a genius, he was not innately mentally deficient and that he could be more efficient if he was not constantly nagged and humiliated by having his inadequacies commented upon. They were also told that by being held up to standards he couldn't live up to, any ability he did possess was being destroyed. It was suggested that what L needed was praise for what he had done and encouragement in doing it still better, that L's difficulty seemed to be the result of general emotional tension. They were to ignore his stuttering, which in all probability would disappear as the tension disappeared, since he had not stuttered when he first began to talk. They were to speak very distinctly and slowly to the child and give him every aid in training him to be self-reliant. They were also to give him simple responsibilities in the home. L's father asked the interviewer, "Why does he let his nose run constantly when he knows it irritates me so?" The reason was advanced that perhaps L might be using this as a device for getting even with his family, actually to annoy them and at the same time direct attention to himself. Appropriate reading material was suggested to the parents.

One day when the children were having a birthday party at which ice-cream and cake were being served, the teacher asked L if he wouldn't help her serve it. He replied confidently, "I won't drop it," and he didn't.

The second rating, which was done eight weeks after training had begun, revealed the following changes. L was much more secure. His stuttering had lessened and was evident only when he became excited. He was very careful to keep his nose clean. He was more alert and exerted more effort and perseverance in both his play and work periods. He was also less submissive and was entering into the group not as one to be laughed at, but on an equal basis with the other children.

The following tabulations give the data for this child:

Behavior Patterns	First Rating	Second Rating [†]
Plays with group	5	3
Self-reliance	6	4
Ascendance	6	4
Selfishness	5	Same
Sadism	5	4
Nervous habits	1	4
Security	7	5
Resourcefulness	7	5
Co-operativeness	3	Same
Perseverance	5	3
Responsibility	6	3

[†]Eight weeks after first rating

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Ratings of Home Environment		
Category	Rating	Remarks
Protection <i>vs</i> rejection	4	Change
Logical <i>vs</i> illogical approach	7	involves
Encourages <i>vs</i> discourages development and expression of ideas	7	training
Fosters <i>vs</i> inhibits social development	4	in logical
Calm, happy home life <i>vs</i> unhappy home life	4	scientific approach

Child J

Until J was three and one-half years old she seemed to be developing normally, showing little negativistic behavior or emotional aberrations. Then, as her mother explained in the interview, "she suddenly changed into a little demon, flew into temper tantrums, refused to eat or go to bed at regular intervals, and developed enuresis!"

Upon investigation it was discovered that J's misbehavior did perhaps seem to occur suddenly but not without a definite cause. The changes occurred in J at the time her mother gave birth to a baby boy.

The mother was very eager to remedy the situation, and it was pointed out to her that what J was passing through was jealousy and insecurity through loss of her former position as sole possessor of the affections of the immediate family which included a grandmother and grandfather as well as an ailing aunt. During the interview Mrs. S revealed that not once had she tried to prepare J for the baby's coming, saying she thought J was too young to understand, and, furthermore, she naturally thought she would "love" the new baby as a matter of course.

A program for readjusting the situation was determined to accomplish two things: first, to reinstate J's security in the family, and secondly, to inculcate a feeling of affection and responsibility in her for her baby brother. Before the baby's arrival, J and her mother had been together a great deal of the time. Mrs. S had frequently taken J with her on various errands, and so forth. When the baby came, this intimacy was naturally discontinued since, as Mrs. S said, it took all her time and energy for the baby.

The following suggestions were made by the investigator. Each day Mrs. S was to devote about thirty minutes exclusively to J. She was to take her walking or simply be with her, reading to her or playing with her. Several times they played house, a game of which J was very fond. Mrs. S made the suggestion several times to J that perhaps they ought to have a little brother in order to have a real family, pointing out to her the families in which there were several children. Mrs. S said to J, "It's so nice to have a little brother, when he grows up he'll be able to play with us. So let's take good care of our baby so he'll be able to grow up very soon and then we can all have fun together!" Mrs. S utilized this type of suggestion very frequently and at the same time tried to make J responsible for the baby by letting her help while he was being bathed, allowing her to fetch his clothes, and to do other little things for him.

Six weeks later Mrs. S reported that J had ceased much of her negativistic behavior, and that she was referring to the baby as "our baby." Her nervous

habits were not observed as frequently, and she very seldom wet her bed. The last time this had happened, J had been out playing all day and was so tired that her mother put her to bed immediately without placing her on the toilet.

Mrs S reported that J is now proud of her brother and likes to help him. She is very much amused as he shows signs of recognizing her when she comes into his room.

The following tabulations give the detailed data for this child.

Behavior Patterns	First Rating	Second Rating*
Plays with group	3	Same
Self-reliance	4	Same
Ascendance	3	Same
Selfishness	6	4
Sadism	6	Same
Nervous habits	3	6
Security	6	2
Resourcefulness	3	Same
Co-operativeness	6	4
Perseverance	6	Same
Responsibility	4	Same

*Six weeks after first rating

Category	Ratings of Home Environment	Rating	Remarks
Protection vs rejection		4	In this ex-
Logical vs illogical approach		6	perimental
Encourages vs discourages development and ex-			study attention
pression of ideas		3	was directed to
Fosters vs inhibits social development		3	parents' illogical
Calm, happy home life vs unhappy home			unscientific
life		2	approach

SUMMARY

The purpose of this study is twofold: first, to determine the relationship between five characteristics of parental behavior and eleven selected patterns of child behavior, and secondly, to determine the effect of certain changes which were actually made in the home environment upon selected patterns of child behavior.

The group studied in this investigation consisted of thirty-three children ranging in age from two years, one month, to five years, six months, and the families of these children. The group was above average in socio-economic status.

Description of the home environments was secured by means of a modified interview procedure. On the basis of the data obtained in the interview, each home was given five ratings on a 7 point scale based on the judgment of the interviewer. Data on the behavior of the child were obtained by the ratings of three observers who were in daily contact with the children. The final rating was based on the average of the three individual ratings. These ratings were correlated with the ratings on the home environment. According to the relationships

indicated by the correlations, experimental situations were instituted in order to determine the possibility of modifying the behavior of the child. These training situations consisted of a simple training program designed to include the most generally accepted principles of child development. Following the training period, the children were rerated by the same observers and comparisons of these two ratings were made.

The following results were obtained:

1 Analysis of correlations between parental protection vs. rejection and child behavior patterns suggests that overprotected children tend to withdraw from the group, may be submissive, and lack self-reliance, whereas rejected children tend to be ascendant and sadistic. Nervous habits and a feeling of insecurity tend to characterize both the extremely overprotected and extremely rejected children though the overt manifestations of the behavior may be different. The pertinent correlations ranged from 43 ± 09 to $73 (\eta)$. The data indicate that the submissiveness of the overprotected child may take either the form of extreme docility or extreme negativism. The ascendancy of rejected children tends to take the form of aggressive and sadistic behavior. The nervous habits of overprotected children appear more infantile than those of rejected children. Plausible explanations as discerned from analysis of the data are advanced for these various relationships.

2 Home environments characterized by a "logical scientific approach" tend to produce such types of child behavior as the following: self-reliance, responsibility, resourcefulness, and perseverance. The relevant correlations ranged from 45 ± 09 to 57 ± 08 . There tends to be a negative relationship between nervous habits and a "logical scientific approach."

3 Home environments encouraging "development and expression of ideas" tend to correlate significantly with such patterns of child behavior as resourcefulness, co-operativeness, self-reliance, and perseverance. The pertinent correlations ranged from 40 ± 10 to 60 ± 08 . Sharing experiences with children and providing them with adequate materials and situations seem to be important parental factors in encouraging "development and expression of ideas."

4 Home environments that foster social development seem to correlate significantly with the following patterns of child behavior: ability to play with group, co-operativeness, responsibility, and ascendancy. "Fosters social development" correlates negatively with selfishness, and sadistic behavior. These pertinent correlations ranged from 40 ± 10 to 64 ± 07 . The data tend to indicate that fundamental elements involved in fostering child's social development may be the social adaptability and adjustability of the parents themselves. These data also seem to indicate that parental provision for ample opportunity so that the child may make social contacts outside of the home itself tends to be an important factor in "fostering social development."

5 A calm, happy home life appears to be related positively with a child's security, his co-operativeness, and ability to play with the group, and tends to be related negatively with nervous habits and sadistic behavior. These relevant correlations ranged from 44 ± 09 to 61 ± 07 .

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PART FOUR

THE SIGNIFICANCE OF A DYNAMIC CONCEPTION OF KNOWLEDGE

by

Ralph H. Ojemann, Ph.D.

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THE SIGNIFICANCE OF A DYNAMIC CONCEPTION OF KNOWLEDGE

Fundamentally all pragmatic or scientific knowledge has a changing probability characteristic. This conception has tremendous significance whenever a bit of knowledge is used in formulating a plan of action. There are a number of difficulties that may be traced rather directly to the failure to recognize this characteristic. These problems beset not only parent education, and the application of child development to child guidance, but they are common to all situations in which knowledge is used. Cases in point are disappointments that arise when so-called principles or suggestions are applied, and the results are not what would be expected of the verbal formulation of the principle. "That is all right in theory but it won't work in practice" epitomizes the outcome of such disappointments. In some quarters the reaction has gone so far as to relegate knowledge to a relatively minor position in the control of behavior.

It is the purpose of this paper to analyze and bring to a focus the fundamental conception that knowledge has an approximate character, that the degree of approximation may vary from one portion of a field to another, and that the degree may undergo changes at varying rates. An attempt will be made to demonstrate that difficulties arising from the application of knowledge are not the result of the ineffectiveness of knowledge itself, but are rather the result of a too static or inflexible interpretation of its nature.

As a background for this discussion it may be noted that one of the marks of our culture is the attempt to live by relatively inflexible "rules-of-thumb." There are traditions, codes, mores, and laws. Both youth and adults tend to adopt a host of comparatively inelastic maxims about life without ascertaining the degree of validity they represent. Although the maxims of youth may be different, perhaps diametrically opposed to those of adults, they tend to be of the same fundamental character. Adults may assume that smoking a package of cigarettes a day has a definite physical effect upon a youth, or that social behavior pattern A is unquestionably helpful. Youth may assume that smoking a package of cigarettes a day has no physical effect of any consequence, or that social behavior pattern A is unquestionably useless. Neither

generation seems to be aware that knowledge at any given moment has limits, that few things are so well known that they can be stated as representing 99 per cent success when applied, and that often the extent of our knowledge is so restricted that we can effect only 75, 50, or 25 per cent success.

The old order changes to be sure. It changes to a new order that may be different from the old in many respects. However, the new tends to be like the old in one significant aspect. It is as inflexible and fixed as the one it displaced.

Since relatively little emphasis is placed on the limits of knowledge in present-day teaching, and since relatively little attention is given to the varying degrees of approximation that knowledge presents at a given moment, one would expect that the nature, function, and significance of research as an enterprise of the race is but little understood and appreciated by the general population. Data which will be presented later in this paper confirm these expectations.

It will facilitate the discussion to use the term "probability" and we shall call our problem "the changing probability" or "dynamic" concept of knowledge. In this paper an outline of the concept and a demonstration of its contribution will be presented analytically and experimentally.

THE DYNAMIC NATURE OF KNOWLEDGE

Pragmatic or scientific knowledge of our environment and of ourselves has its source in observations or measures. In the process of developing a so-called "fact," individual observations or measurements furnish the starting point. For example, in obtaining a simple bit of knowledge such as the length of a table, we apply a yardstick and express our results in terms of units that are common currency in our group. If the work is carefully done we find that when the measuring stick is applied several times under conditions as nearly identical as possible, the successive measures vary by a few fractions of an inch. The several measures are averaged and the latter is taken as the length of the table. If the fact of variability is recognized, the variability of the average may be expressed by its probable error. If increased accuracy is desired, more observers, more refined measuring instruments, and more refined conditions may be used. But the variability, although small, is present even in the most refined measures that anyone has yet been able to devise. Our knowledge of the length of the table takes the form of an average and its variability. What is

true for our knowledge of the length of the table is true for all knowledge

If the effect of a given type of reward upon children is unknown, children of known characteristics are placed in known situations (some are rewarded, others are not) and the results observed and recorded in terms of averages and then variabilities

In some areas of a given field the variability of measures is relatively large. In others it may be relatively small. The variations arise from at least two sources: (1) the error in the measuring process, and (2) the fluctuation of the factors influencing the relationship under observation. Here the variation from the two sources will be grouped together and for convenience referred to as the probable error of observation. If the error in the measuring instrument is relatively small and the fluctuation in the factors influencing the relationship are small also the variability of the average will be small. Such is the case when the length of an iron bar is measured with micrometer calipers under standard conditions of temperature, composition, and the like. If the error in the measuring process or the fluctuation in the potent factors is increased the probable error of observation becomes larger. Condition A represents the situation when the errors of measurement are relatively small and the fluctuations in the significant factors affecting the relationship under observation are held within small limits. Condition B represents the situation when the errors of measurement are increased and the potent factors remain relatively constant. Condition C represents the situation when both the errors of measurement and the fluctuations in the potent factors are increased.

In almost any field, and in the social sciences particularly, the errors inherent in the measuring instrument and the care with which experiments are conducted may differ rather widely from one portion of the same field to another. In the general area of human behavior, for example, measurements of reaction time have been made with relatively small variability, whereas such measurements as those of reading ability apparently have a somewhat greater variability, and measures of personality, still greater variability. At a given moment therefore, a field may consist of generalizations based upon measures having a relatively small probable error of observation, a moderately large probable error, a still larger probable error, and hypotheses whose probable errors are not known.

Furthermore the concept "probability character" must be expanded into a "changing probability character" because of the continual chan-

ges which take place in the knowledge in any field. Hypotheses may be subjected to test and thus be changed into generalizations of a known probable error. More accurate measuring processes or more accurate control of conditions may be developed with the result that generalizations having a relatively large probable error are replaced by generalizations having a smaller probable error, etc. It is also important to note that these changes may affect any or all portions of the field. They may be of all magnitudes. They may take place at all speeds.

The changes are in effect a reduction of the size of the probable error of observation. Previously observed results are not overthrown, however, more refined methods of measuring the length of a table may be developed with the result that a measure with less variability is obtained. But the earlier measures still hold in the sense that they would be obtained whenever length is measured under the first specified conditions and with those specified methods. There is thus a certain stability to tested knowledge.

The changing probability conception of knowledge becomes important when knowledge is applied. For example, if we are aware of the probable error of the generalization that diphtheria antitoxin will immunize children against diphtheria, we are not surprised to find that about 3 per cent of the population cannot acquire immunity. In the present state of our knowledge we can say that the chances are about 97 in 100 that particular antitoxin will work. In making the plans for our family we will have to take into account the possibility that our children may be among the 2 or 3 per cent. A nation hears its president declare himself in favor of a "sound but adequate currency." This declaration implies that the president or someone else will be able to control the forces making for a "sound but adequate currency." However, if the nation is aware of the probable error of the observation underlying this prediction, it will not be surprised to find that the situation may get out of even the president's control.

If it is assumed that a host of maxims about life are exact, and their probability character is not recognized, disillusionment may follow when plans do not work. Planning for the future involves an application of generalizations, all of which have a great or small probable error. The resulting plan may have a greater or smaller probable error.

Furthermore, the use of a generalization in so far as its probability character is concerned is not affected by factors which do not change

the magnitude of the probable error. For example, it makes no difference whether the observations were made 25, 50, or 100 years ago. If no refinements in the data basic to a given generalization have been made within the last twenty-five years then the generalization in its probable error form of twenty-five years ago still represents the limits of knowledge. Time alone does not affect the size of the probable error.

There are a number of problems for which the changing probability conception of knowledge is of fundamental importance. It may help to clarify the concept and show its contribution by discussing a few typical applications.

The Use of Rules and Principles

In parent education the story is told of a lecturer who as a young student of child behavior gave a series of talks to parents entitled "A decalogue for parents." After the first child arrived in the family the title was changed to "Ten hints for parents." After the second child arrived the title was changed to "Some suggestions for parents." The story goes on to say that after the third child was born the talks were no longer given.

The example may be extreme in character but it illustrates a problem that often arises in child development. The pendulum swings from exact and specific suggestions to an abandonment of all attempts to teach knowledge. "We know nothing," report the disillusioned students of human behavior after finding that their first prescriptions do not work.

From what we have said of the dynamic or probability nature of knowledge it follows that there are no rules that are exact. The character of knowledge makes it impossible to formulate a generalization without a probable error. The probability character of any principle, suggestion, or other summary of a group of observations must always be taken into account. When any principle is applied control will be achieved in only a certain proportion of cases, depending upon the state of knowledge at the moment. Since one generalization may have a smaller or larger probable error than another, the probability that it will work will be correspondingly greater or less.

A recognition of the probability character of knowledge can reorient and vitalize teaching. Teaching a generalization within its probable error tends at once to make teacher and learner aware of

the limits of knowledge, and leads directly to an inquiry into the methods by which knowledge is developed

Man, to make effective use of scientific knowledge, must rise to the point where behavior takes on a flexible character proportionate to the changing probability nature of his knowledge. He cannot live by "rules" or "inflexible laws."

Redefinition of "Old-Fashioned" and "Out-of-Date"—the "Wisdom of the Past"

From the above discussion there is some danger that knowledge may be put in an unfavorable light. "Will we ever know?" queries the observer. "There are revolutions and upsets in all scientific fields and all we have are theories, and these will change from generation to generation." The pendulum has now swung to the opposite extreme and past observations are thrown overboard. It is not difficult to demonstrate that this reaction is illogical. New observations may refine but they do not completely overthrow previously observed results. More refined methods of measuring the length of the table or analyzing the components of an atom may be developed and a measure of less variability obtained, but the earlier measures still hold in the sense that they would be obtained whenever measurements are made under the earlier conditions and with the same methods. Thus there is a certain stability to tested knowledge. Take for example the development of the electronic conception of matter. That it did not overthrow Mendeljeff's table of chemical elements is shown by the fact that present day chemical laboratories make use of both the older atomic and the newer electronic tables. If approximate atomic weights are desired, the less refined data are used. If greater refinements are required, the newer electronic table is used.

If only partially refined data are available, it is illogical to disregard such data in application. Some control over a situation is achieved if one is able to say that a given relationship will hold in 75, 50, or even 25 per cent of the cases. A prediction which is right seventy-five times out of a hundred is an improvement over a sheer guess. It is clearly more helpful to begin with a probable error of known magnitude than to start "from scratch." Thus, the wisdom of the past in the area of pragmatic knowledge consists in reductions of the probable errors of observation.

The Conflict Between Older and Younger Generations

In the introduction to this paper it was pointed out that there is a tendency for the older generation in our culture to adopt numerous inflexible maxims without considering their degree of validity. Because youth tends to do the same, the result is frequent conflict. Both generations at a given moment are faced with knowledge of the same limits and extent, and both can solve problems involving observable relationships only by careful inquiry. Why should there be conflict? Perhaps both do not see knowledge in its varying degrees of approximation and therefore do not recognize their common problem. The conflict between youth and age is an illustration of the fact that western civilization has not evolved a method of dealing with the shifting probability character of knowledge in its work-a-day world.

The Use of Theories or Hypotheses

There are many areas in which, for all practical purposes, only hypotheses, or perhaps generalizations having exceedingly large probable errors, exist. If action must be taken in such areas, two courses are possible. On the one hand the individual may favor a given hypothesis and proceed to apply it without thought of turning back. On the other, recognizing the magnitude of the error in the hypotheses or the generalizations, the individual may select the best hypothesis and proceed to action. He is aware, however, that the course of action may be in error and is ready to modify his plans as soon as results indicate that modification is necessary. It is at this point that the recognition of the probability character of knowledge makes plan two significantly different from plan one. In plan two the individual does not assume that his plan of action is sure to produce the desired results. He is prepared to change his course of action when the consequences indicate that a change is desirable. In addition he would try to control the situation in such a way that the whole process becomes an experimental inquiry, thus supplying more observations which in turn may help to refine a basic generalization.

Practically every age in human history has witnessed attempts to shape a course of action on the basis of uncertain knowledge. The real loss to the race is that these attempts were not viewed as experimental inquiries and the results recorded to extend man's knowledge.

Attitude Toward Social Problems

When social problems are considered in our present culture, they

tend to be dealt with in rather rigid terms. A definite and complete course of action is assumed as the only possibility. When the N R A was formulated some years ago, emphasis was placed upon the enforcement of codes. These codes, in the last analysis, were assumptions about the solution of the unemployment and other depression problems as they relate to industry. No provision was made for a thorough-going study of the results of the code enforcement, so they might be tested and revised in the light of new data.

It is not difficult to understand the urge for definite and even dramatic action when a social problem becomes acute. But to take a definite and rigid stand on any and all social problems is illogical. This becomes clear when the development of a plan of action is followed through its various stages.

When a course of action is determined thoughtfully, the procedure is to assemble the pertinent knowledge, formulate a judgment on the basis of known data, and then carry the judgment into action. If the basic data are fairly complete it is possible to predict with a relatively small error the probability of the success of a plan. Correspondingly, if the basic data are very incomplete it is impossible to predict the success of the plan.

When social problems become acute and catastrophe is imminent the emphasis is placed upon immediate action. If a catastrophe is in reality pending one can adopt an hypothesis and proceed, but the emphasis is upon studying the results as they appear and not upon blind adherence to the hypothesis regardless of results.

The dynamic conception of knowledge thus affects very vitally and directly our attitude toward social problems. It emphasizes that the degree of success of a solution based upon the best knowledge available at the moment will vary. It also stresses the importance of adopting an experimental attitude when man has to go beyond the limits of knowledge.

The Fundamental Significance of Adult Education

A dynamic concept of knowledge gives a fundamental significance to adult education. At present the purpose of adult education is to provide the knowledge, skill, attitudes, etc. that are needed in solving an immediate problem. Not much consideration is given to the question of whether this education is truly progressive or merely remedial in nature. It is quite clear, however, that if adult education is supplying something which should have been supplied earlier in life, it is per-

forming a remedial or reparative function—a function which is temporary and without fundamental significance. For example, it is doubtful whether adult education can justify its existence by seeking to develop a scientific attitude. The scientific attitude should have been developed and used long before the adult level.

However, if the emphasis is placed upon the continual growth and refinement of knowledge, adult education has a fundamental and progressive contribution to make. If knowledge grows, then each professional individual and tradesman must continue his learning throughout life to remain competent. As long as society has sufficient vitality to engage in research, adult education is significant and fundamental. Remedial purposes are transitory when viewed in the long run. Keeping pace with the advance of knowledge is not remedial, it is constructive.

Redefinition of "Accuracy"

There is a tendency in our culture for such terms as "correctness" and "accuracy" to carry a static connotation. If John is asked by his physics teacher to measure the length of an iron bar, his result is very likely to be marked right or wrong. There is a certain rigidity. The right answer, however, is not a point but a range, and the important thing is the variability of the average.

Furthermore, whether a given answer is right or wrong may depend upon the use which is to be made of it. Under ordinary conditions all that is needed is an average that has a variability of approximately a quarter or an eighth of an inch. But if the bar is to serve as a part of a very delicate machine, it will be necessary to determine the length to within a few thousandths of an inch. But neither measure can be said to be right or wrong in the sense that it is always to be preferred or more useful than the other. Accuracy and correctness are matters of degree of refinement, depending upon the use to which the measure is to be put, and thus they acquire a dynamic rather than a static connotation.

EXPERIMENTAL STUDY OF DYNAMIC CONCEPT

It would appear from the above discussion that a dynamic conception of knowledge would be exceedingly useful in making an adaptation to the natural and social environment. This analysis merely sets the hypothesis, however. The question arises, does experimental evidence affirm or deny this hypothesis?

Studies designed to determine the relation of a concept to behavior presuppose a method of determining the degree to which the concept is operative. In a particular method of testing, problems were devised which could not be solved unless the subject had a functional understanding of the probability characteristics of knowledge. The test instrument consisted of a series of problems representing a variety of approaches to the concept of both essay and multiple choice type. The items of the essay type were divided into several parts, each part of which required only one or two written sentences from the subject. For each item a detailed scoring key (described later) was developed. A copy of the test is on file at The Iowa Child Welfare Research Station. The purpose and items comprising the measuring instrument are as follows:

1 To determine whether the individual is aware of the dynamic conception of knowledge, using it to guide his actions, remaining aware of the possibility of its extension and refinement, and realizing the importance of using only such knowledge as has been brought up-to-date. Two short essay exercises were included in the test to measure the awareness of this changing character of knowledge. In one item the subject was given a young mother's use of nutrition principles learned ten years earlier in high school. The other exercise is similar but the application involves generalizations relating to agriculture.

2 To determine whether the subject is aware of the probability character of measurements, the following exercise was used. In a certain factory the workers used a steel rule by which length could be measured to the nearest one- or two-tenths of an inch. Later an attachment for the rule was invented which made it possible to measure length to about one-hundredth of an inch accuracy. A workman who did not know of the latter device used the rule alone to measure the length of a rod. He worked very carefully.

- a Is he getting the exact length of the rod? Explain briefly.
- b Would he get the exact length of the rod if he used the attachment? Explain your answer briefly.

3 To determine whether the subject would emphasize the magnitude of the probable error in preference to other important considerations such as the age of the discovery. Exercise No. 8 which was included for this purpose, describes a certain doctor who, in treating a rare disease in one of his patients, used a method developed thirty years ago. The question is asked, under what conditions would you consider this doctor old-fashioned? Give a brief explanation.

4 To determine the subject's ability to interpret the magnitude of the probable error in terms of the demands of a situation (including such factors as the errors in the subsequent operations). Exercise No. 3 and exercise No. 2c are combined to test this. In each case the subject is asked to interpret refinements in terms of the requirements of the situation.

5 To determine whether the subject can distinguish the prediction usefulness between generalizations having a small probable error and others having a large probable error. Item No. 9 was constructed for this measurement.

6 To determine whether the individual is able to cite at least one experiment or a group of experiments in some field closely related to his interest and state in simple terms the experiments' effect on the knowledge in that field Item No 6 asks him to give such an example

7 To determine whether the subject can take some field closely related to his interest and indicate two facts in that field which have been fairly well demonstrated and two questions which have not been investigated to any great extent In item No 7 a wide variety of fields are suggested The subject is asked to select two and indicate for each two well-established facts and two relatively unstudied questions

8 To determine whether the individual can indicate the general function of research In item No 5 he is given a list of statements and asked to check those which represent his idea of the function of research

All items were scored in terms of zero, one-quarter, one-half, three-quarters, and full credit In each case full credit was given to an answer indicating a dynamic concept For example, in the items relating to keeping pace with the growth of knowledge answers which expressed the idea that knowledge should be brought up-to-date from time to time as a result of new facts or new discoveries, received full credit Illustrations of such statements follow

- a Scientific research may have changed the facts in that text
- b Newer and better methods are being discovered almost every year
- c Scientists may have found the old way wrong or have found a better way
- d She should use a later edition as new studies are being made
- e Ideas may possibly have changed and she should keep up on the new discoveries

Answers which give no awareness of the possibility of changes in knowledge are given no credit Examples are

- a It was a good book and she worked carefully Therefore, her method was OK
- b That was a good method
- c She should use her own ideas They would be better than any book

If the subject admitted the possibility of change but denied it dogmatically he received one-fourth credit Examples of items receiving one-fourth credit are

- a Methods of feeding would not change in that time
- b Ideas may change but not much in the six years

If the subject indicated the possibility of change without including a dogmatic statement as to the extent of change he was given three-fourths credit

- a She should get a later edition because things may have changed in that time
- b, It was a good way except that there may be changes

- c Methods have changed and are probably better now
- d It would be OK in some respects but things change as time goes on

CONCEPT OF KNOWLEDGE — HIGH SCHOOL SENIORS

In order to study a group of subjects known to differ in their understanding of the dynamic concept of knowledge the test was given to two groups of high school seniors consisting of 213 subjects. The subjects were seniors in the high schools of two Iowa towns and included a few students drawn from rural areas. In administering the test the directions at the beginning were read orally. The subjects were allowed ample time to complete the test. In most cases thirty minutes was sufficient.

Before presenting the results of the test a few characteristics of the test itself will be discussed. Any essay type test raises the question, what is the reliability of the scoring procedure? Two observers using the scoring key yielded a reliability coefficient of 89 ± 01 on this test which is reasonably satisfactory for items of this type. Since only one form of the test exists at present and the number of items on the test is small it is not possible to make extensive analysis of the reliability of the test as distinguished from the reliability of the scoring procedure. However, in the study carried out by Musgrove (p. 115) the test was given to the control group at the beginning and at the end of an experimental period. The time elapsing between the two administrations of the test was two weeks. The correlation of the scores on the two administrations of the test was 87 ± 04 .

To what extent is the dynamic concept operative in this group of 213 high school seniors? From the data in the following tabulation it can be seen that about one-half of the group recognizes the changing characteristics of knowledge to the extent that they are not willing to use knowledge six to ten years old unless recent developments are incorporated. Similarly about one-half recognizes that time alone does

Item	Per Cent
1 Growth of change of knowledge	47.4
2 Probable error character of measurements	25.6
3 Effect of time on magnitude of probable error	49.1
4 Relation of size of probable error to demands of situation	14.2
5 Effect of size of probable error on accuracy in prediction	12.0
6 Example of scientific investigation	9.1
7 Description of limits of knowledge	3.4
8 Function of research	17.3

not change the magnitude of the probable error. The proportion receiving three-quarters or full credit on the remaining items is lower. About one in four recognizes the probable error character of measurements. One in seven is aware of the fact that a measure may exist in both a refined and crude form depending upon the demands of the situation. Approximately the same proportion can point out how the size of the error in basic knowledge is related to the accuracy of predictions.

The proportion able to cite a scientific investigation and to discuss briefly its effect on knowledge in the respective field is rather low. Also, few were able to indicate the boundaries or limits of knowledge. For these subjects a field does not seem to be divided into hypotheses and tested data. Discriminations between hypotheses and tested data are not made. As one student expressed it "Everybody knows that brushing the teeth prevents tooth decay."

It is interesting to note that slightly more than one in six can indicate the general function of research. It was pointed out at the beginning of this paper that since current teaching places relatively little emphasis upon the changing probability characteristic of knowledge the significance of research would be but little understood and appreciated. The data in the above tabulation tend to support this assumption.

It is not necessary to dwell at great length upon the significance of these findings. If a dynamic conception of knowledge is essential to the interpretation of the many important problems discussed earlier it is clear that high school students are allowed to reach the senior year without acquiring an understanding of a very fundamental concept.

DYNAMIC CONCEPT AND ATTITUDE

Eighty-three subjects were used to study the relationship of the concept of the nature of knowledge to prejudices in everyday problems. The average IQ of this group was 102 with a range from 72 to 140. Forty-seven statements relating to problems of everyday life including questions of manners, health, civic affairs, etc. were submitted to the upper and lower quartiles of the groups as determined by the nature of knowledge test. All items were statements of relationships which could be observed and were open to testing. They were not questions involving hypothetical values or merely questions of right or wrong. A few examples will illustrate their nature.

- 1 Drinking a half-gallon of wine every week will injure one's health and efficiency.

- 2 Smoking makes a girl coarse and weakens her character
- 3 Our laws are more favorable to the rich than to the poor
- 4 Government ownership of railroads and public utilities such as electric power plants and telephones would give better service than private ownership
- 5 If divorce laws were not so strict there would be many more happy marriages
- 6 If crime movies were abolished the number of crimes would decrease considerably

The subjects were asked to indicate by encircling a number for each statement whether they thought the statement was completely true, true to a large degree, an open question, false to a large degree, or completely false. Number 1 represents a completely true and number 5 a completely false statement. Most of the items were deliberately designed to be open questions. The comparison between the upper and lower quartiles of the group of eighty-three subjects is given in the following tabulation:

Group	Number	M (1+5)	Range of Middle 50 Per Cent of Cases
High quartile	20	11.45	6 to 14
Low quartile	20	19.10	15 to 25

The data indicate the number of subjects in each group, the average number of statements accepted as true or false, and the range in number of statements accepted by the middle 50 per cent. The low group accepted almost twice as many statements as settled issues as did the high group. The variability of the two groups is about the same and there is no overlapping in the middle 50 per cent. It appears from the data in the above tabulation that subjects who understood the dynamic nature of knowledge evidence considerably fewer prejudices in every day problems than subjects who are not aware of the nature of pragmatic knowledge. That the relationship is a causal one, that is, that a more complete understanding of the nature of knowledge would bring about a reduction in prejudice, is further demonstrated in the study of Musgrove (p. 115-128).

SUMMARY

This paper has attempted to develop the concept of the "changing probability" or a "dynamic" character of knowledge, and to present analytical and experimental evidence of the role of that concept in behavior.

Considered first was the process by which scientific knowledge is obtained. Knowledge has its source in measures or observations having greater or lesser variability. In the best techniques several observations of each phenomenon are made and the results expressed in terms of an average and its variability. This gives knowledge a "probability" characteristic. Viewed over a period of time it is noted that continual changes in the knowledge of any field may take place. Hypotheses may be subjected to test and thus translated into generalizations of known probable error. The development of more accurate measuring instruments may result in improved generalizations with smaller probable errors. Such changes may take place in any or all portions of a given field. They may be of all magnitudes. They may take place at all speeds.

The role of this concept in behavior was studied analytically and experimentally. An analysis was made of such problems as the conflict between youth and adults, the application of principles and rules, the meaning of "old," "modern," "out-of-date," and "accuracy", the use of theories and hypotheses as guides to action, the effect of various attitudes toward social problems, and the fundamental significance of adult education.

When these problems are analyzed it is observed that (1) The conflict between youth and adults may be rooted in a common misconception of the nature of knowledge, which, if understood, leads to the realization that the conflict is wholly unnecessary. (2) No principle or rule can be used with the greatest success without an appreciation of the magnitude of its probable error. (3) Theories and hypotheses cannot be best utilized in action unless the unknown character of their probable errors is realized and action, essentially in the nature of an experimental inquiry, is indicated as the logical course. (4) Adult education need not rest its laurels on a remedial or reparative function for it has a positive and exceedingly vital function to perform in assisting the individual to keep pace with advancing knowledge.

A study of the concepts of 213 high school seniors revealed a very inadequate understanding of the dynamic nature of knowledge. Only about one-half of the group were unwilling to use knowledge ten years old unless recent developments were incorporated. About one-fourth of the group are aware of the approximate character of measurements. One in seven could describe how the size of the probable error was related to the probable success of plans or predictions. Less than 10 per cent were able to indicate the boundaries or limits of knowledge.

in a field of their own selection or to name and describe an example of a scientific investigation in that field

An analysis of a group of eighty-three students on the dynamic conception of knowledge test indicates that the group which considers knowledge as having a static character tends to be more prejudiced in the consideration of controversial issues of everyday life than the group which recognizes knowledge as having a dynamic character. The latter group evidences significantly greater care in the approach to social issues. Youths armed with a dynamic concept tend to assess and apply knowledge more accurately than their companions armed with less fortunate and more poorly equipped static concepts.

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PART FIVE

AN EXPERIMENTAL STUDY OF THE DYNAMIC
CONCEPTION OF KNOWLEDGE IN YOUTH

by

Ruth Musgrove

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AN EXPERIMENTAL STUDY OF THE DYNAMIC CONCEPTION OF KNOWLEDGE IN YOUTH

INTRODUCTION

Whenever knowledge is applied, as in the case of parents who seek knowledge of child development to apply it in guiding their children, an interesting characteristic of knowledge comes to light. Fundamentally, from the pragmatic point of view, a field of knowledge presents a medley of hypotheses and generalizations having probable errors of various magnitudes. Some generalizations are summaries of data having a large probable error, others are summaries of data having a smaller probable error. It is not possible to use knowledge, as in developing a plan of action and predicting its success, without taking into account the respective probable errors of the generalizations involved. This characteristic of knowledge is often overlooked in application.

In much of the reading material and lectures which are offered as helps to parents in guiding their children, generalizations are stated positively, with no account taken of their respective probable errors. And when a statement is made only tentatively, it seems to lose its appeal or significance for many people. They seem to have no conception of the nature of knowledge or the possibility of its growth and change.

If we measure a simple relationship, such as the length of the cupboard, we find a very small variability as we measure from time to time. The best statement of the length of the cupboard will be the average of all the measures and its probable error. If we measure a complex relationship, such as a child's attention span in a play situation with blocks, we find a large variability in our repeated measures. The larger variability is due both to the fluctuations in factors not completely under control, and to the comparative unreliability of the method of measurement. Still the best statement we can make of the child's attention span will be an average of all the observations plus its probable error.

Aside from this error in the very base of our knowledge, there is another factor which leads to confusion in the minds of persons who wish to use all knowledge as a formula to be applied with sure results.

The state of knowledge is changing continually. We can consider all knowledge as ranging in exactness from a guess or hypothesis to a well-tested generalization based on highly refined, controlled measures and observations. Day by day some of the hypotheses are being transferred up the scale, the size of their probable errors lessened. It is on such a concept of knowledge and its use that this study is based.

This conception of knowledge as something having not only a "probability" character, but a "changing probability" or "dynamic" character appears of fundamental importance in a number of problems. It is not possible to use knowledge as a recipe for human behavior. The nearest approach that can be made safely is to state every prediction so as to include an indication of the size of the probable error of the knowledge on which the prediction is based. In some cases, as in the so-called "exact" sciences, many of the probable errors are relatively small and the corresponding error of prediction will be small. In the social sciences, many of the probable errors are relatively large and the corresponding error of prediction is large. It would seem that these ideas are significant wherever and whenever a plan of action is developed. Ojemann (5) and Thorndike (3) have pointed out the importance the probability concept plays in the discussion of controversial issues.

The concept also seems fundamental to the field of adult education. Logically, in no field can an intelligent application of a generalization be made unless it is brought up-to-date from time to time. This gives basic importance to continuing an adult education.

This concept of knowledge may have a part to play in the conflict of youth and adult. Youth cannot flout a tested relationship within the limits of the probable error without taking the consequences. Neither can it classify as "old-fashioned" tested knowledge, no matter how old, if the limits of the probable error are recognized. On the other hand, age cannot logically expect an hypothesis or generalization of large probable error to be accepted by youth as knowledge of the same order as that having a small probable error, no matter how dear to the heart the hypothetical assumption may have grown. The mere passing of time does not change the size of the probable error.

In the same manner, such a dynamic conception of knowledge may assist in making an intelligent appraisal of the contributions or limitations of the past and of traditions to matters of manners and morals when these are viewed from the pragmatic viewpoint.

Summary of Previous Studies

Ojemann (5) assisted by Dawe, carried out a study to determine to what extent high school students are aware of knowledge as changing or "dynamic." Two groups of high school seniors were used, totaling 213 subjects. They found that about one-half of the group recognized the changing character of knowledge to the extent of being unwilling to use ten-year old knowledge unless recent developments are added. About one-fourth of the group was aware of the approximate character of measurements. About one-half of the group realized that time alone does not change the size of error in knowledge. For them knowledge is old-fashioned only when some new discovery or better measure has been found since the original knowledge.

A comparison was made between the high and low groups when ranked according to the score on the *Dynamic Character of Knowledge Test*. It was found that those who made low scores on the test seem to have more settled convictions on problems which are not closed issues. They were also shown to have a tendency toward a more immature attitude toward social activity and customs than the high group. According to an application of the Luria technique, the low group tended to give more indications of conflict than the higher group. Some evidence thus exists which tends to indicate the effect of a dynamic conception of knowledge. The question arises, can high school students develop an understanding of the concept, and if so, what is the effect upon attitudes?

Statement of the Problem

This study has three aims. First, its purpose is to determine whether an understanding of knowledge as dynamic rather than static can be developed by high school students in one or two specialized fields. The specific fields used were nutrition and child development. Second, the study aims to discover whether such an understanding in these specific fields can be developed to a generalized level so that it can be applied to other specific fields without further specific teaching. Third, the study attempts to throw further light on the question "What is the effect of the development of such a concept of knowledge on the attitudes of high school students?" The time interval between the beginning of the learning program and the final measure of attitude was relatively short, but nevertheless an attempt was made to detect any influence of change in knowledge on change in attitude.

PROCEDURE

General Plan of Study

A group of high school seniors was tested to determine their level of understanding of a dynamic concept of knowledge. Their attitudes toward certain social issues and practices were determined by an attitude test. The group was then divided into experimental and control divisions. To the experimental division a prepared learning program was administered. The learning program was designed to give the subjects an understanding of the dynamic conception of knowledge. The control division proceeded with the usual class work. At the end of the training period the experimental and control divisions were again tested to determine the changes made both in knowledge and attitudes. Comparisons were then made between the initial and final tests, between the experimental and control groups, and between the knowledge and attitude tests to determine the extent of change in knowledge, the effectiveness of the learning program, and the relation of change in knowledge to change in attitude.

Subjects

Thirty-nine high school seniors served as subjects. These were divided into an experimental group of twenty-five and a control group of fourteen, which were equated as nearly as possible on IQ and special observations. In equating the groups, scores on the Otis Group Intelligence Test and special observations supplied by the Principal of the school were used. The experimental group had an average IQ of 103.5 with a standard deviation of 10.11. The control group had an average IQ of 103.4 with a standard deviation of 8.5. The IQ range in the experimental group extended from 83 to 125, that of the control group from 91 to 125. The sexes were divided as evenly as possible between the two groups, the experimental group having fourteen boys and eleven girls, and the control group having eight boys and six girls. Any peculiarities of individuals which would have unbalanced the groups were adjusted through the special observations of the Principal who knew the subjects well.

Measuring Instruments

The tests used included the *Dynamic Concept of Knowledge Test* developed by Ojemann (5), and a short form of the attitude test developed by Gabriel (1). The initial test for *Dynamic Concept of*

Knowledge contained the following items

- Item 1 General possibility of growth of knowledge
- Item 2 Parts a and b Probability character of knowledge
- Item 2 Part c Relation of the size of errors of measurement to the errors in subsequent operations
- Item 3 Time as a negative factor producing change, and relation of error of measurement to errors in subsequent operations
- Item 4 General possibility of growth of knowledge
- Item 5 Function of research
- Item 6 Concrete example of the growth of knowledge
- Item 7 Limits of present knowledge
- Item 8 Time alone as a negative factor, research as a positive factor producing change
- Item 9 Relation of size of probable error to use of knowledge in prediction

To these items were added two more on the final test to determine whether the conception of the possibility of growth of knowledge had been generalized sufficiently so that its application to fields other than those specifically studied was being made. These items were.

- Item 10 Probability character of measurement in the field of preventive medicine
- Item 11 Relation of size of error to use in prediction in the field of education

A copy of the test is given in the thesis on file at the University of Iowa library. Some of the items require a short discussion. To objectify the scoring procedure a detailed scoring key was developed in terms of typical answers receiving specified scores. The scores on the *Dynamic Concept of Knowledge* test were computed as per cents of the possible total score. Each item was scored according to its quality, as in the scoring key, as zero, one-fourth, one-half, three-fourths, or full credit. Since in the initial knowledge test there were ten items, the total possible score was ten. The number of points made by each subject was added and expressed as a per cent of the total possible points. In the final knowledge test there were twelve items, making the total possible score twelve. The number of points scored by each individual was again added and expressed as a per cent of the total possible points. The individual score on both the initial and final test is thus the per cent of total possible points scored. The reliability of the test is indicated by the correlation of the scores on initial and final tests of the control group. The control group was retested after an interval of two weeks. The correlation between the scores is $.89 \pm .04$.

The attitude tests consisted of two parts. In the first part was given a series of statements to determine open-mindedness on social, moral, and ethical questions. Examples of statements appearing in the test are

"Older persons learn by experience to be more tolerant and broad-minded "

"If we could eliminate slums from all our cities we could abolish crime "

"Men who play poker are likely to be selfish and untrustworthy "

These were checked by the subjects on a five-point scale which represented "more or less completely true," "probably true or true to a large degree," "undecided, an open question," "probably false, or false to a large degree," and "more or less completely false." The score is the number of extreme statements made, that is the total number of statements marked "more or less completely true," or "more or less completely false" is the subject's score.

The second part of the attitude test consisted of three problematic situations to which the individual was given a choice of responses. These were chosen from Gabriel's scale as representative of situations comparable to those which confront the subjects of the present study. Situation I was known in Gabriel's test as Situation III in the social conformity scale. The problem was that of a girl's use of cosmetics in a community where the use of cosmetics was opposed by social custom. The possible responses to this situation were such statements as

"She should modify her use of cosmetics "

"I think she should be free to use as much cosmetics as she likes "

"She should pay no attention to what people say "

Situation II and III were known in Gabriel's test as Situation I and III in the scale of attitude toward dancing. Situation II presented the problem of a young girl attending a small, well-chaperoned dance with a select group of young people. The responses to this situation were in the form of statements which should be made by her mother to her about the dance, such as

"Dancing is an enjoyable exercise, and I hope you will have a good time "

"You will be much better off in bed "

"You know the group that will be there, and it is up to you to decide whether or not you care to accept the invitation "

Situation III presented the problem of a group of young people going to a dance in a neighboring town where they would mix with all ages and all social levels and dance to the music of a large and popular orchestra. The possible responses are expressed in terms of parents' opinions, and the subjects were asked to check the statements which expressed their own opinions.

These three items which were part of the attitude test were scored according to the scoring key presented by Gabriel (p. 130-156).

Learning Program

The learning program consisted of reading material on the nature and use of knowledge, informal lectures interspersed with questions and answers and discussion by the students, and a series of problems to give the subjects an opportunity to apply the principles under discussion.

The reading material was a mimeographed paper entitled *How Knowledge Grows and How We May Use It*. This was written by the experimenter under the direction of Dr. Ralph H. Ojemann. It consisted of explanations of the way in which knowledge grows, the causes of the probable error of measurement, and the relation of the probable error to use of knowledge. The specific examples illustrating the various points were all drawn from the fields of child development and nutrition. An effort was made to simplify the presentation as much as possible. According to Gray and Leary's formula (2) for determining reading difficulty, the reading material had an average reading score of 1323, or about the level of Stewart's *Country Life Reader*, Book II.

The lectures were prepared in outline form and presented informally. Opportunity was given for questions on the part of students, and all questions were answered fully and discussion encouraged. The problems were presented orally. Half of them were discussed by the group and the other half were answered individually in writing.

Four periods of one hour each were available for the experiment. In the first of these the two groups were assembled and given the initial tests of knowledge and attitude. Sufficient time was allowed to permit every student to finish both tests without being hurried. Thirty minutes sufficed for most subjects, and all had finished in forty-five minutes. At the end of the initial testing period, the division of subjects into the experimental and control groups was made. The control group was dismissed to another room while the experimental group remained for

a ten-minute period which was devoted to the definition of knowledge, a brief explanation of the purpose of the learning program, and the assignment of the reading material

For the second hour period, the experimental group met with the experimenter while the control group met in another room and continued with their usual work in social science. The experimental group listened to the informal lecture and took part in the discussion. This period was devoted to definitions of knowledge, its range, its variability from field to field, and its growth both by the addition of facts and the refinement of error in present knowledge. The inevitability of error in all measurements was also presented and discussion begun on that point. During the class discussion three of the prepared problems were given orally to the class. These were discussed and solved by the group.

In the third hour period of the experiment, the discussion of the probable error of measurement was continued. The relation of size of error to use of knowledge was also presented and discussed. Problems were presented orally for the subjects to solve individually, writing the solution down with an indication of the reasoning by which they arrived at their conclusions. Questions were answered on all points not clear to the subjects.

In the final period, the full hour was devoted to the administering of the two final tests of knowledge and attitude to the combined groups. The time interval between the first and last periods was two weeks.

ANALYSES OF DATA

The analyses of the data will be presented in four parts

- a Extent of dynamic concept of knowledge in total group and a comparison with former studies
- b Effectiveness of the learning program in specific fields and in generalized areas
- c Correlations between significant factors
- d Changes in attitude accompanying changes in knowledge

Extent of Dynamic Concept of Knowledge in Total Group

The per cent of the total group of thirty-nine subjects receiving three-fourths of full credit on various items of the knowledge test is given in the following tabulation

Item	Present Study	Ojemann's Study (3)
Aware of changing character of knowledge	43	47
Probable error character of measurements	15	25
Relation of probable error to use		
Magnitude of probable error with time	36	49
Magnitude of probable error with errors in subsequent operations	24	14
Variations in magnitude of probable error with prediction	18	12
Example of scientific investigation	23	6
Approximate limits of knowledge	41	3
Function of research	17	17

The corresponding data from Ojemann's study (3) are given in the third column

In the present study, 43 per cent of the subjects recognized the changing character of knowledge to the extent of repudiating six- to ten-year-old knowledge unless recent developments could be included. Fifteen per cent of the subjects recognized the approximate character of measurements. Thirty-six per cent were aware that time alone does not change the size of the error of knowledge, but rather that change in knowledge grows out of research. Only 17 per cent of the subjects were able to indicate the fundamental nature of research. Approximately one-third could name or describe a concrete example of the growth of knowledge. Twenty-two per cent could relate the size of the probable error to the size of errors in subsequent operations or to accuracy of prediction.

A comparison of these data with those reported in Ojemann's study indicates a fairly close agreement between the two. In both studies, about half the subjects were aware of the changing character of knowledge. Twenty-five per cent of Ojemann's subjects were aware of the probability character of measurement, with the present study the percentage was 15, as for the Relation of Probable Error to Use of Knowledge. The subjects in the present study showed slightly less understanding of the relation of magnitude of probable error to time than did Ojemann's subjects. However, they showed slightly more awareness of the relation of magnitude of probable error to errors in subsequent operations and to prediction. The difference between the subjects of the two studies in the ability to state satisfactorily an example of scientific investigation and to designate the approximate limits of knowledge is probably due in large part to the fact that Ojemann's subjects were asked to give two examples in their test, and the subjects of the present study were only asked to give one. The two studies showed equal understanding of the function of research.

Effectiveness of the Learning Program

In Specific Fields Taught The comparisons of the initial and final scores on the knowledge test for the experimental and control groups are given below

	Group I		Group II	
	Initial	Final	Initial	Final
Mean	35.3	47.9	30.7	29.8
S.D.				
dist	15.7	15.9	16.3	12.4
Difference		12.6		-1.9
σ difference		4.4		5.8
Ratio of difference to standard deviation of difference		2.8		3

The experimental group made a gain of 12.6 ± 4.4 . The ratio of the difference to the standard error of the difference is 2.8, which is considered significant. There are 99 chances in 100 that the difference is as scored. The control group shows practically no change in score, the difference -1.9 ± 5.8 can easily be accounted for through chance fluctuations.

Another method of determining the significance of the differences between initial and final tests is illustrated by the following data:

	Initial Test	Final Test
Experimental group	35.3	47.9
Control group	30.7	29.8
Difference	5.4	19.1
σ difference	5.4	4.9
Significance ratio	1.0	3.9

Differences between the group scores in the two tests show no significant difference on the initial test. The score difference was 5.4 ± 5.3 , the ratio of difference to standard error of the difference was 1.0. On the final test the difference between the two groups was 19.1 ± 4.9 in favor of the experimental group. The difference shows a ratio with its standard error of 3.9, indicating that the difference is significant.

These differences show a significant change in the experimental group over the period of the experiment. The control group does not show this change. The gain in the experimental group of 12.6 ± 4.4 has a significance ratio of 2.8, high enough to be considered significant. There are 99 chances in 100 that the difference as scored is a real difference. The ratio of 3 for the loss in the control group, however, shows that the loss is not statistically significant. The gain of 12.6 points of the experimental group, and the difference between the two groups at the end of the experimental period, indicate that it is possible for high school students to develop an understanding of the "changing probability" character of knowledge.

Another aspect of the question of effectiveness is the interest of the students. It may be that they can learn, but do they learn efficiently? The observations of the experimenter in the present study were that about three-fourths of the subjects of this study were interested, as shown by the questions asked. All the students read the assigned reading material. About four-fifths of the subjects seemed eager to take part in the discussion, offering their own opinions from time to time and bringing up new aspects of the problem. Nearly all asked questions, since the learning periods were informal. Their questions and opinions seemed to indicate that the concept of knowledge under discussion had a direct bearing on their own lives and problems.

Extent of Generalization Some of the items comprising the knowledge tests relate rather specifically to the fields of child development and nutrition. It was from these fields mainly that the illustrations were drawn which were used in the learning program. It is therefore of interest to determine how the scores on the items specifically relating to child development and nutrition compare with the scores on comparable items not specifically related to the teaching area.

In the initial and final tests, two items were included to measure the awareness of the growth of knowledge. One relates to child nutrition. The other relates to soil fertility. The average scores on the initial and final tests are as follows:

	Initial	Final	Gain
Nutrition	50	58	8
Soil fertility	33	42	9

Gains were made on both items although the increases on both are relatively small.

Several other comparisons can be made that may throw some light on the extent to which the concepts were generalized. In the final tests two items were included measuring the awareness of the subject of the probable error character of measurements. One considered simple measures of length. Comparable illustrations had been used in the reading material. The other item considered measures of ability in arithmetic. The initial and final scores of the first item are, respectively, 35 and 67, or a gain of 32 points. The second item was not included in the initial test, but if the score of the control group can be used as a measure of relative difficulty, the respective scores are 34 and 43, or a gain of 9 points.

One item was included in the initial and final tests which considers the relation of the magnitude of probable error in basic data to the error in prediction. The fields considered are chemistry and educa-

tion This item yielded an average score of 28 on the first and 30 on the second, or a gain of 5 points

Thus while the data are obviously not comprehensive, all of the comparisons tend to indicate that gains were made in the application of the ideas to larger areas than merely those considered in the learning program

Changes in Attitude Accompanying Changes in Knowledge

The data showing a comparison of scores on Part I of the initial and final attitude tests are given below

	Initial	Final	Difference	Ratio
Group I	95	73	17 ± 11	15
Group II	80	80	00	

In Part I of the attitude test series, the experimental group shows a change of 17 ± 11 . The significance ratio for this difference is 15, or 43 chances in 100 that the difference is significant. The control group made no change.

Although only a short time had elapsed between the initial and final tests, there is some evidence already of a change. It must be remembered that the learning program was confined strictly to the fields of nutrition and child development and did not consider any of the fundamental issues comprising this test. Any change that occurred took place through the indirect route of the influence of knowledge upon attitude.

The data from Part II of the attitude series are given below

	Situation 1	Situation 2	Situation 3
	Group I		
Initial	49	41	48
Final	52	49	45
Difference	3	8	3
	Group II		
Initial	46	34	46
Final	47	43	46
Difference	1	9	00

There were no significant changes made in Part II of the attitude series. The experimental group shows a change of 8 in Situation II, but the control group shows a similar change.

The results presented in this chapter show that high school students are capable of developing a dynamic conception of knowledge. The concept as it was presented in this study does not appear to be too abstract for them. The tendency toward a change in attitude accompanying the change in knowledge indicates that the dynamic conception of knowledge may be helping them to adjust their thinking on social problems.

SUMMARY

The purpose of this study is three-fold. It attempts to determine whether a conception of knowledge as having a "changing probability" or "dynamic" character rather than a static character can be developed in specific fields by high school students. It also wishes to answer in part the question, can this conception of knowledge be developed to such a generalized level that it will be applied to fields other than those to which the teaching is restricted? The third aim of this study is to throw further light on the influence of knowledge on attitude.

Thirty-nine high school students, divided into an experimental group of twenty-five and a control group of fourteen, were used as subjects. The groups were equated on the basis of IQ scores on the Otis Group Intelligence Test. Three tests were used in this study: Ojemann's (5) *Dynamic Concept of Knowledge Test*, a short test on attitude toward controversial social issues, and a short form of the attitude test developed by Gabriel (1).

A learning program which emphasized specifically the changing probability character of knowledge in the fields of child development and nutrition was administered to the experimental group. Two one-hour periods were devoted to the learning program. At its conclusion both groups were again tested for knowledge and attitude. Two weeks elapsed between the initial and final tests.

Comparisons were made between scores of the initial and final test, between the achievements of the two groups on the tests, and between certain items indicative of the concept of knowledge in the specific teaching areas and in generalized areas. An effort was also made to determine whether the change in knowledge would change attitudes significantly in so short a time.

The findings show that it is possible for high school students to develop an understanding of the "changing probability" or "dynamic" character of knowledge. The experimental group showed a significant increase in average score on the *Dynamic Concept of Knowledge Test* which the control group did not show.

While the comparison of items to determine the development of the concept in generalized areas was not comprehensive, yet it showed a tendency toward generalized application of the principles learned in specific fields.

Although the time between the initial and final tests is short, there is some indication of a tendency to be more open-minded on controversial questions and social issues. An increase in the understanding of

the true nature of pragmatic knowledge seems to aid in making a more accurate appraisal of controversial issues

Such results would seem to have far-reaching significance. The "changing probability" nature is a characteristic of all pragmatic knowledge. It was indicated previously that this conception is of fundamental importance wherever knowledge is applied. If high school students can develop an understanding of this characteristic, then it would appear difficult to justify the present relative lack of emphasis upon it in the training programs of adolescents, youth, and adults. It would seem that teachers of knowledge in all fields including parent education should do an "about face" in their preoccupation with a static concept of knowledge and accuracy, and cultivate the very fundamental and vital "changing probability" conception.

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PART SIX

A STUDY OF THE ATTITUDES OF PARENTS OF
ADOLESCENTS

by

Anne Gabriel

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A STUDY OF THE ATTITUDES OF PARENTS OF ADOLESCENTS

THE GENERAL PLAN OF STUDY

It is the purpose of this investigation to study several questions relating to the attitudes of parents of adolescent children. There are many attitudes of parents toward the activities and behavior of adolescent children that appear important. One group relates to the interaction between the sexes such as dancing and petting. Another relates to the conformance or departure from modes of behavior accepted by adults as proper. Still another concerns the assumption of responsibility by adolescents.

For each attitude, several questions may be asked. What is the attitude held by untrained parents? Can the attitude be modified? If so, what is the relative ease at various chronological and mental age levels? What types of learning programs are the most effective in producing changes? What are the influences of the attitudes of parents upon the development of their children? What are the attitudes held by trained persons?

In this study six attitudes were selected for study. They include three related to the interaction of the sexes, namely, petting, dancing, and attending mixed swimming parties, and one related to each of the following aspects of adolescent behavior: social conformity, fulfillment of assumed responsibility, and becoming self-reliant. For each attitude a measuring instrument was developed and data were obtained relative to two of the above questions. What is the attitude held by untrained parents? How does the attitude of untrained parents compare with that of persons having an extensive background in child development and who are engaged in the process of guiding adolescent children?

This study is one of a series of investigations conducted at the Iowa Child Welfare Research Station for the purpose of supplying data to develop more effective programs of learning for parents and to study the influence of factors in the family or home environment upon the development of children. Studies of parental attitudes at preschool and elementary levels have been made by the following: Ackerley (1), Butler (2), Coast (3), Hedrick (4), Ojemann (5), Phillips (6), and Roberts (7).

Ackerley made a psychological analysis of certain knowledge and attitudes of parents of elementary school children. Butler studied the needs of high school students and constructed a program of learning for certain phases of child development and family relationships. The data from her study indicate that growth in attitudes may be brought about at the high school level by a well-constructed learning program. Coast made a study of the knowledge and attitudes of parents of preschool children. Through a learning program she was able to produce changes in knowledge. Hedrick investigated the effectiveness of a program of learning designed to change parental attitudes toward self-reliance in the preschool child and found that the program resulted in a significant change in the direction of favorability. Ojemann devised attitude scales toward self-reliance for three levels of development—the preschool child, the elementary school child and the adolescent child. These scales have been used by Ackerley, Hedrick, and in the present study. Phillips devised a method for studying parental behavior in relation to the eating and sleeping activities of preschool children. Roberts developed forms for recording the home play of preschool children, which included the type and number of verbal controls used by the parent in the play situation. She studied the influence of certain changes which she made in the home environment upon the behavior of parents and children.

The plan of this investigation includes the following

1. Constructing scales for measuring parental attitudes toward various phases of adolescent development
2. Measuring the attitudes of a cross-section of parents relative to these phases of adolescent development
3. Comparing the attitudes of parents highly trained in child development with the attitudes of parents who are relatively untrained in child development

The methods of constructing the scales, their administration, and the analysis of the results appear in the following chapters

THE CONSTRUCTION OF THE SCALES

General Plan

One of the best known methods of measuring attitudes is that employed by Thurstone. He applied a technique well-known in psychophysics to the scaling of statements expressing various degrees of favorability or unfavorability toward some psychological object. His scale takes the form of a series of general statements arranged on an 11 point

continuum One of the major difficulties of this method is that differences in meaning assigned by various subjects to the key-concepts are not taken into account

Two methods were used in the present study to overcome this difficulty The first is to ask the subjects to adopt a given meaning for the important concepts and to apply it to each statement For example, in that part of the scale on petting which makes use of general statements, the subject is asked to consider petting as "acts of fondling or caressing between boys and girls fourteen to sixteen years of age, including kissing and embracing but not including complete physical intimacy" This method of defining the key-concept was used in one form of the scale for measuring attitude toward petting, and in a portion of the scale for measuring attitude toward mixed swimming

This method is not entirely satisfactory especially when such difficult concepts as social conformity and assumption of responsibility are involved Hence, another method was devised which consists in setting forth the description of a situation in brief narrative form, listing several reactions, and asking the subject to check those with which he agrees For example, in the scale on petting a situation involving several young people is described Mother and daughter are discussing the happenings on the preceding evening and the following lines of action are among those suggested

"You should have responded to his embrace and kiss"

"You should have treated it as a joke, telling him not to be silly"

"You should have slapped his face"

The important question which presented itself at the outset of this study relates to the Q value of such items Can situations and responses be constructed in such a way that the items will have a minimum degree of ambiguity? The data which will be presented later show that it is relatively not difficult to construct items that have an average Q value in the neighborhood of 1.5 or 2.0

For each situation an attempt was made to provide a sufficient number of statements to permit expression of varying degrees of attitude from one extreme to the other.

Scale for Measuring Attitude Toward Petting

When this investigation was started, a list of 113 general statements and five situations relating to petting were available These were scaled on an 11 point continuum by sixty-six judges all of whom were either college graduates or had had some college work including psychology. From these data each item was assigned a scale value

The scale value of each item is the median step of all of the judges' placements, and the interquartile range of the placements gives the Q value. The Q value is the measure of ambiguity of the statement, those statements which have a wide distribution of judges' opinions have large Q values. In this scale the statements that have Q value above 2.1 were considered ambiguous and eliminated from the scale.

In addition to the statements with high Q value, two situations which did not present a distribution of items over the entire continuum were eliminated. The scale was then divided into two forms. Form I consists of thirty general statements and Form II of three situations which include forty-four items.

The step value and Q value of the statements used in Forms I and II are given below.

Number	Step Value	Q Value
<i>Form I</i>		
General Statements		
1	10.6	0.5
2	2.9	1.3
3	1.3	1.2
4	9.1	1.6
5	9.5	1.3
6	2.3	1.4
7	9.3	1.3
8	10.5	0.6
9	6.9	1.1
10	8.7	1.7
11	1.3	0.9
12	9.6	1.1
13	5.1	1.6
14	7.9	1.8
15	1.7	1.5
16	9.5	1.3
17	0.8	1.1
18	8.5	1.6
19	10.6	0.8
20	5.0	1.6
21	0.6	0.6
22	10.0	1.2
23	3.5	1.1
24	1.9	1.2
25	0.9	1.3
26	2.7	1.4
27	4.2	1.7
28	3.4	1.3
29	1.1	1.6
30	2.7	1.5
<i>Form II</i>		
Situation I		
a	1.4	0.9
b	9.3	1.3
c	4.1	1.9

d	64	21
e	25	10
f	54	09
g	53	18
h	100	11
i	48	17
j	94	15
k	04	03
l	105	06
m	80	14
n	96	12

Situation II

a	87	13
b	18	14
c	85	14
d	92	19
e	102	08
f	77	15
g	105	05
h	39	14
i	15	17
j	71	14
k	04	08
l	58	09
m	78	17
n	42	13
o	107	06
p	56	07

Situation III

a	14	13
b	105	07
c	72	16
d	85	17
e	55	04
f	96	14
g	62	16
h	43	14
i	77	15
j	10	11
k	93	14
l	104	06
m	70	12
n	100	08

The Scale on Mixed Swimming

The method of constructing this scale was similar to that used in constructing the one on petting, except that in this scale the statements were printed on the left half of a page and the series of digits from 1 to 11 on the right half of the page with instructions to the judges to encircle one of the numbers to indicate the point at which the statement would fall on the attitude continuum. This method of judging the statements is less laborious than sorting cards. A sample sheet and full instructions for judging are given in the thesis on file at the University of Iowa library.

The judging of the items was done by faculty members and graduate students at the University of Iowa. The number of judges used in this scale was eighty-three.

The situations in this scale were set up in such a way as to measure the differences in subjects' attitudes toward different situations. One situation was set up in which the party included responsible teachers from the high school. In the three other situations the parties were unchaperoned and included such conditions as going to and from the swimming place in small groups, lying on the sand, etc.

After the seventy-one statements composing the scale had been rated by the judges, the scale value and the Q value of each opinion was calculated and the statements that had a Q value above 3.5 were declared ambiguous and eliminated from the scale. There were twenty-four such statements. The step value and Q value of each of the remaining statements are given on the following pages. The mean Q value of the opinions in this scale is 2.2 and the estimate of reliability of Q values is .14 scale units, which is a satisfactory reliability for scale values which are recorded to one decimal point.

Number	Step Value General Statement	Q Value
1	0.8	1.5
2	.99	1.7
3	.09	1.7
4	.97	1.8
5	10.1	1.4
6	.91	2.0
7	1.8	2.1
8	.94	2.1
9	10.3	0.7
10	1.3	2.8
11	.42	3.1
12	.53	2.9
13	.45	3.1
14	.96	1.9
15	.86	2.1
16	.46	2.9
17	1.6	2.0
18	.78	2.4
19	.50	3.2
20	1.1	2.2
Situation I		
1	0.8	1.5
2	.72	3.4
3	.49	3.5
4	.64	3.3
5	10.4	0.5
6	1.0	1.4
7	.56	3.1
8	1.1	1.8

9	30	29
10	46	35
11	94	19

Situation II

1	99	21
2	17	34
3	89	27
4	94	23
5	48	33
6	16	28
7	89	24
8	15	23
9	08	17
10	53	22
11	79	23
12	64	33

Situation III

1	12	28
2	17	28
3	91	24
4	76	30
5	81	24
6	87	23
7	100	21

Situation IV

1	101	19
2	78	35
3	15	22
4	42	30
5	86	18
6	100	17
7	11	21

The Scale on Dancing

This scale was constructed according to the same plan as those relating to mixed swimming except that in this scale only situations were used. Fifty-one judges rated the statements. The scale values and Q values of each of the thirty-three statements are given below. The statements that had a Q value above 3.5 were omitted from the scale because of ambiguity. The mean Q value of the statements is 2.0 and the reliability of the scale values is .17, which is satisfactory for scale values which are recorded to one decimal point.

Different types of situations are represented. In the first situation the dance is a small, private, well-chaperoned affair. In the second, the dancing takes place at a public dance hall with a "questionable reputation." The third describes a public dance in an "approved" environment at a neighboring town.

Number	Step Value	Q Value
Situation I		
1	83	21
2	09	13
3	94	16
4	68	25
5	36	22
6	69	30
7	54	07
8	51	34
9	08	09
10	95	19
11	11	15
Situation II		
1	55	06
2	76	18
3	15	27
4	92	18
5	97	12
6	47	24
7	93	18
8	94	17
9	33	31
10	32	24
11	45	29
Situation III		
1	90	16
2	39	26
3	56	25
4	73	24
5	17	18
6	96	17
7	88	27
8	22	32
9	42	35
10	08	15
11	54	07

The Attitude Scale on Social Conformity

In the preliminary scale, eight situations with a range of statements under each were submitted to a group of twenty-five judges who had had experience in rating attitude scales. The three situations that had the greatest spread of statements over the continuum and the lowest ambiguity value were selected to use as the attitude test on social conformity.

The mean Q value of the statements is 1.6, the probable error of the mean .87, which is sufficiently reliable for scale values computed to one decimal point. The scale values and Q values of the statements are given in the following tabulation.

Number	Scale Value	Q Value
Situation I		
1	06	06
2	103	06
3	16	15
4	96	23
5	61	20
6	80	16
7	40	30
8	98	14
9	58	15
10	90	18
Situation II		
1	10	09
2	95	14
3	97	13
4	10	15
5	96	23
6	26	16
7	60	00
8	101	15
9	23	28
10	90	19
Situation III		
1	08	10
2	50	23
3	100	19
4	103	06
5	93	15
6	45	33
7	25	21
8	56	19
9	50	22
10	15	23
11	07	08
12	62	22

The Attitude Scale on Responsibility

This scale was constructed in the same way as the scale on social conformity, using the same judges, with five situations in the preliminary scale, which were reduced to three for use in the measuring device.

The mean Q value of the statements is 1.3, with the probable error of the mean 0.3. The scale values and Q values of the statements are shown in the following tabulation.

Number	Scale Value	Q Value
Situation I		
1	91	14
2	06	10
3	64	19
4	45	20

5	90	13
6	03	06
7	30	24
8	77	21
9	15	14
10	60	27
11	83	17

Situation II		
1	100	10
2	98	17
3	07	11
4	27	09
5	16	18
6	40	18
7	81	16
8	50	19
9	14	13
10	105	07
11	48	17
12	13	16

Situation III		
1	87	15
2	51	16
3	20	32
4	98	12
5	47	22
6	05	07
7	55	17
8	70	28
9	39	19

The Attitude Scale on Self-Reliance

The attitude scale on self-reliance was constructed by Ojemann and it is described by him in *Researches in Parent Education III*. Essentially the scale consists of a series of statements of activities in which adolescents engage and the subject is asked to indicate what she believes to be the optimum age at which the ability to perform these activities should be developed. For example, the parent is asked to respond to this statement, "I believe that a child should be taught to buy his own clothing without help from an adult by the age of——" by inserting the age in the blank.

The scoring key was allocated on a linear continuum by a group of judges who were highly trained in the field of child development. The reliability and validity of this scale are set forth in the monograph

ADMINISTRATION OF TESTS

A total of 482 subjects, all of whom are parents, was used in this study. All of the subjects have children who are adolescent, between

the ages of twelve and twenty, or preadolescent, ten to twelve years

Approximately 100 of the subjects were obtained through the co-operation of study group leaders in Iowa. About eighty subjects were personal friends of the investigator, living in Florida and Texas. The remaining 300 were secured through home visits in Iowa City and California, Missouri.

The tests were administered in small groups or individually. Each subject was allowed as much time as was needed for checking each scale.

A special effort was made to secure a large percentage of fathers as subjects, but, for various reasons, the co-operation of a comparatively small percentage of fathers was obtained. The total of 482 comprises ninety-seven fathers and 385 mothers.

Occupations

The subjects represented a variety of callings. When classified by occupations, the group percentages are as follows:

Occupation	Percentage
Professional	40
Clerical and Skilled	30
Semiskilled	3
Slightly skilled	15
Unskilled	45
Not given	20

Education

The subjects were classified roughly according to whether or not their education was completed in the elementary school, high school, or college. The tabulation below shows the distribution:

	Eighth Grade or Less	One to Four Years High School	One to Seven Years College	Not Given
Fathers	19	10	64	4
Mothers	89	115	146	35

Size of Family

The number of children in the families represented ranged from one to twelve. The numbers are given below:

Children	Families
1	74
2	156
3	120
4	57
5	24
6	18

7	10
8	3
9	8
10	0
11	1
12	1
Not Given	10

Ages of Children

The age range of the children was from eight days to twenty years plus. The distribution is given below.

Age, Years	Children
Under 10	356
10 to 20	687
Above 20	300
Not given	47

Since the number of subjects varies for each test, a brief analysis for each scale will be presented. The 100 subjects used for the petting scale were obtained through the co-operation of study group leaders and through visits to homes in Iowa City and in California, Missouri. Eighty-seven of the parents were mothers and thirteen were fathers. The educational background of these 100 parents is as follows:

	Eighth Grade or Less	One to Four Years High School	One to Seven Years College	Not Given
Fathers	3	2	7	1
Mothers	24	28	27	

Children in Family	Cases
1	18
2	20
3	28
4	20
5	3
6	6
7	2
9	1
11	1
Unknown	1

Age, Years	Children
Under 10	66
10 to 20	171
Above 20	57
Not given	13

Responses to the mixed swimming scale were secured from eighty-three parents, nineteen fathers and sixty-four mothers. The subjects were obtained through home visits to parents in Iowa City, Iowa, and California, Missouri. The sampling consisted of a very heterogeneous group as the following data will show.

The education of the parents is as follows

	Eighth Grade or Less	One to Four Years High School	One to Seven Years College	Not Given
Fathers	2	4	12	1
Mothers	15	19	23	7

The number of children in these eighty-three families ranged from 1 to 12, the distribution is given below.

Children in Family	Cases	Children in Family	Cases
1	12	6	4
2	24	7	2
3	13	9	2
4	15	12	1
5	7	Not Given	3

The age range of these children is from eight days to above twenty years, the distribution is given below

Age, Years	Children
Under 10	72
10 to 20	113
Above 20	77

The scale on dancing was administered to eighty-nine subjects. The education of the parents was as follows

	Eighth Grade or Less	Education One to Four Years High School	One to Seven Years College	Not Given
Fathers	4	2	13	2
Mothers	17	18	27	3
	Occupations		Number	
	Professional		32	
	Clerical and skilled		17	
	Semiskilled		12	
	Minor skilled		7	
	Unskilled		3	
	Not given		17	

Children in Family	Cases	Children in Family	Cases
1	15	6	4
2	26	7	2
3	23	8	2
4	11	9	1
5	4	Not given	1

Age, Years	Children
Below 10	69
10 to 20	111
Above 20	73
Not given	10

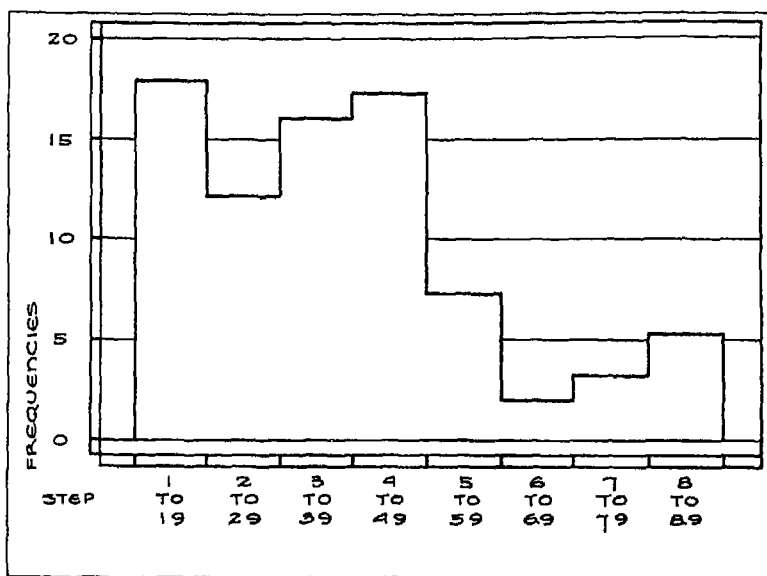


Figure 1 Attitude Toward Mixed Swimming Parties

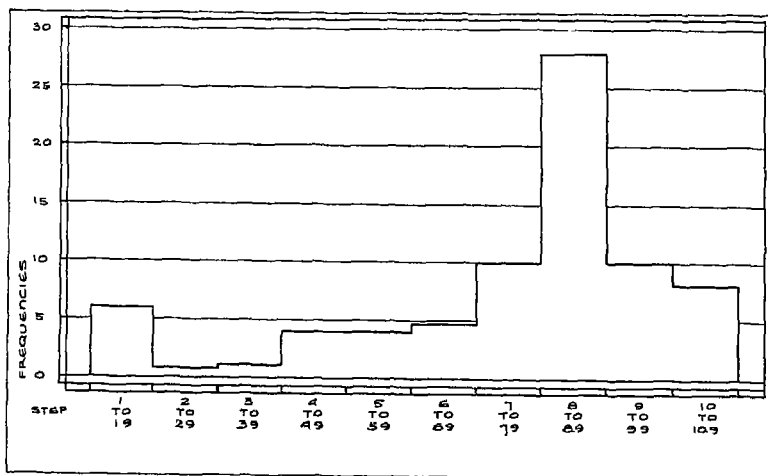


Figure 2 Attitude Toward Mixed Swimming Parties, Situations II, III, and IV

Data on the thirty-nine subjects who responded to the scales on responsibility, social conformity, and self-reliance follow

	Education			
	One to Four			
	Years	High School	One to Seven	
Fathers	Grade or Less		Years College	Not Given
	1	1	8	
Mothers	3	9	16	1
	Occupations		Number	
	Professional		22	
	Clerical and skilled		15	
	Semiskilled			
	Slightly skilled			
	Unskilled		1	
	Not given		1	
	Children in			
	Family	Parents		
	1	5		
	2	19		
	3	10		
	4	1		
	5	3		
	6	1		
	7	0		
	8	0		
	9	1		
	Age, Years		Children	
	Below 10		35	
	10 to 20		56	
	20 and above		16	

RESULTS

The subject's score is the median scale value of all the statements checked. In the following discussion the results are presented.

Since the attitude scales on mixed swimming and dancing contain situations that differ considerably in such factors as the general environment in which the activity takes place and the supervision, the subjects' scores on the two and three types of situations respectively for the two activities will first be given to show the importance of recognizing the variations.

In the attitude scale for mixed swimming parties, Situation I was well planned and included in the party two responsible adults, while Situations II, III, and IV involved small groups with no adults, and such conditions as much lolling around or dimly lighted pools. The results on the two types of situations are as follows:

Situation	Mean	Standard Deviation
I	2.6	1.97
II, III, and IV	6.3	2.40

The difference in mean scores between the two is 3.7 scale steps. These subjects were not opposed to parties of the type indicated in Situation I, but they were more unfavorable to the type represented in Situations II, III, and IV. The distribution of the two sets of results are presented graphically in Figures 1 and 2.

Attitude Toward Dancing

In the scale for measuring attitude toward dancing, Situation I is a small, private, and supervised affair. In Situation II, the dancing occurs at a public dance hall with a "questionable reputation." In Situation III the young people are planning to attend a public dance in a

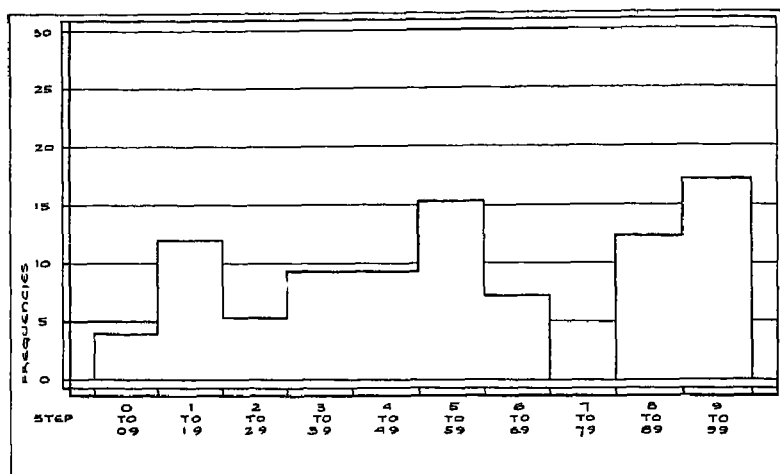


Figure 3 Attitude Toward Dancing, Situation I

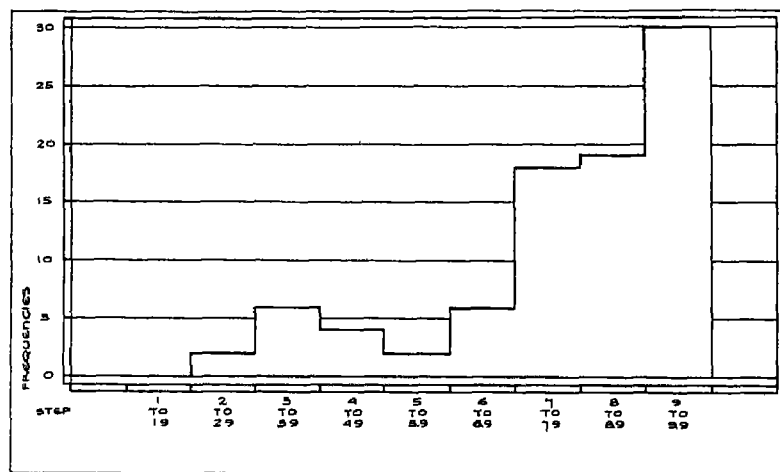


Figure 4 Attitude Toward Dancing, Situation II

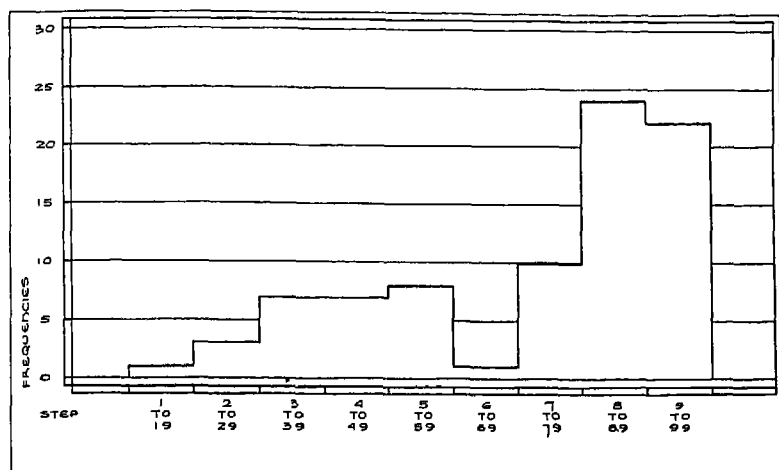


Figure 5 Attitude Toward Dancing, Situation III

good environment at a neighboring town. The results for the eighty-nine subjects are as follows:

Situation	Mean	Standard Deviation
I	5.4	2.92
II	7.7	1.94
III	6.5	2.27

The distributions are shown graphically in Figures 3, 4, and 5.

There is a difference of 2.3 scale steps between Situation I and II.

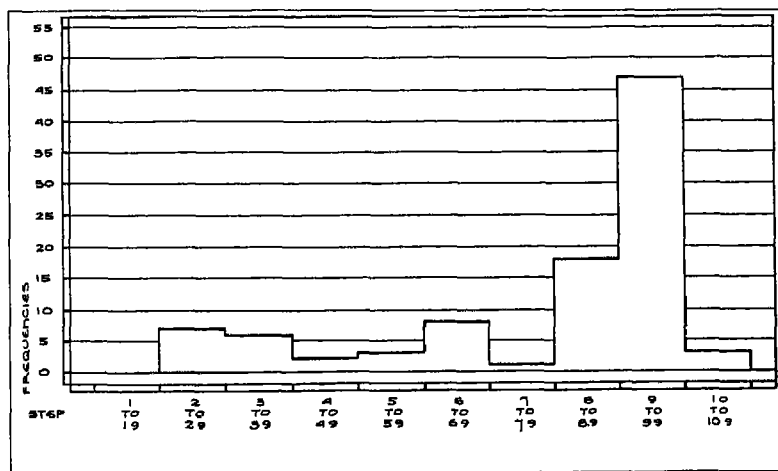


Figure 6 Attitude Toward Petting, Form I

Attitude Toward Petting

As was indicated previously, the scale on petting exists in two forms. Form I consists of twenty-nine general statements and petting is defined as "acts of fondling or caressing between boys and girls fourteen to sixteen years of age, including kissing and embracing, but not including complete physical intimacy."

Form II consists of situations which are all of the same general type. The scores for 100 subjects are as follows:

Form	Mean	Standard Deviation
I	80	2.35
II	78	1.45

These data are presented graphically in Figures 6 and 7. Both means are on the unfavorable side of the scale.

Attitude Toward Mixed Swimming

The scores on the two types of situations included in the scale for measuring attitude toward mixed swimming were given in the discussion of the influence of the type of situation upon the score. In addition to the situations, the scale contains twenty general statements in which a mixed swimming party is defined as one including four or

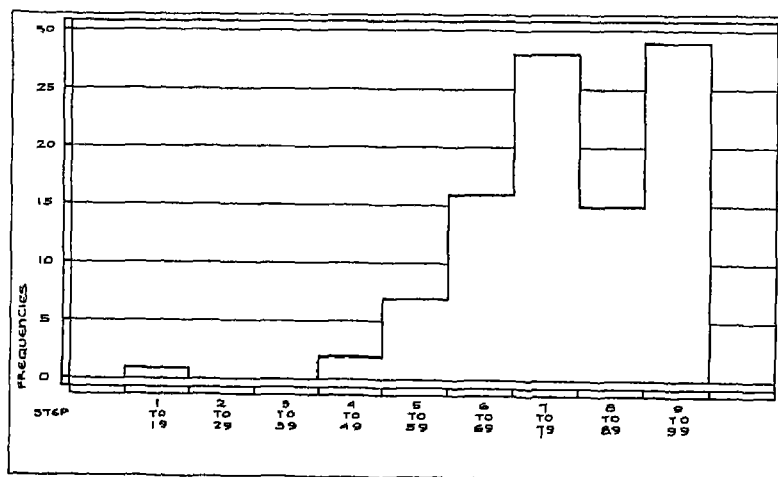


Figure 7 Attitude Toward Petting, Form II

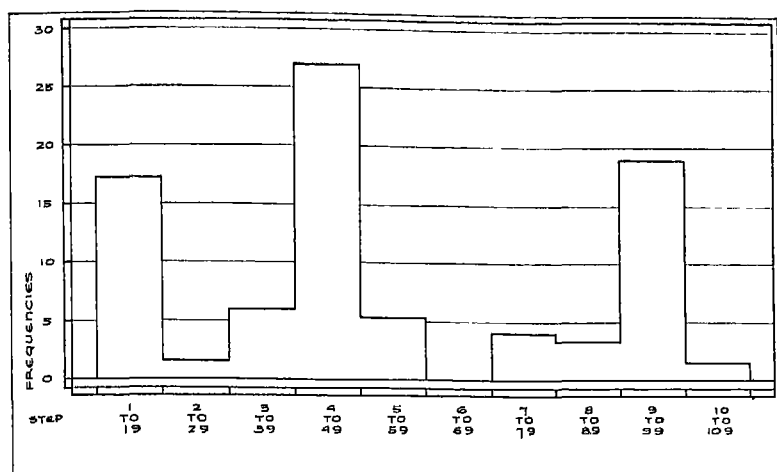


Figure 8 Attitude Toward Mixed Swimming Parties, General Statements

more couples, unchaperoned but conditions otherwise rather desirable. The mean of the scores on the general statements stands between those of the two situations as shown in the following tabulation:

	Mean	Standard Deviation
Situation I	2.6	1.97
General statements	5.3	2.91
Situations II, III, and IV (combined)	6.3	2.40

The distribution of the scores on the general statements are shown graphically in Figure 8.

Attitude Toward Conformity in Social Customs by Adolescents

This scale consists of three situations, the first of which concerns conformity to a simple custom in social intercourse, the second, conformity in dress, and the third, the use of cosmetics by adolescent girls. The distribution of the scores of thirty-nine subjects is as follows:

Situation	Mean	Standard Deviation
I	3.7	1.94
II	2.3	1.68
III	4.4	1.47

The data are presented graphically in Figures 9, 10, and 11.

The greatest favorability toward conformity is expressed in Situation II. This is a situation which concerns conformity to dress in church attendance and probably religious sentiments enter

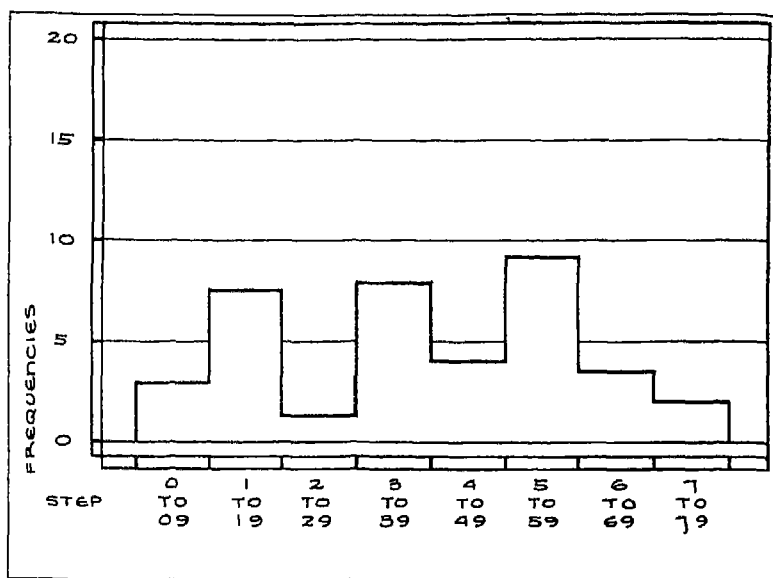


Figure 9 Attitude Toward Social Conformity, Situation I

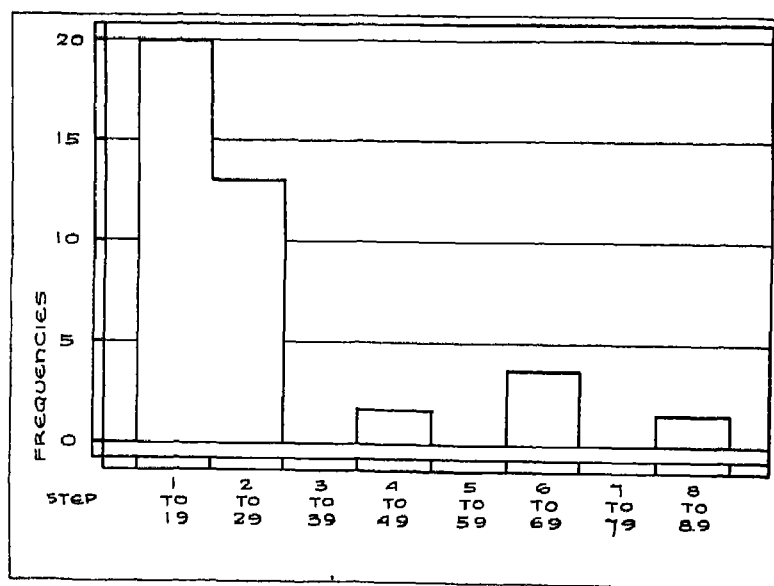


Figure 10 Attitude Toward Social Conformity, Situation II

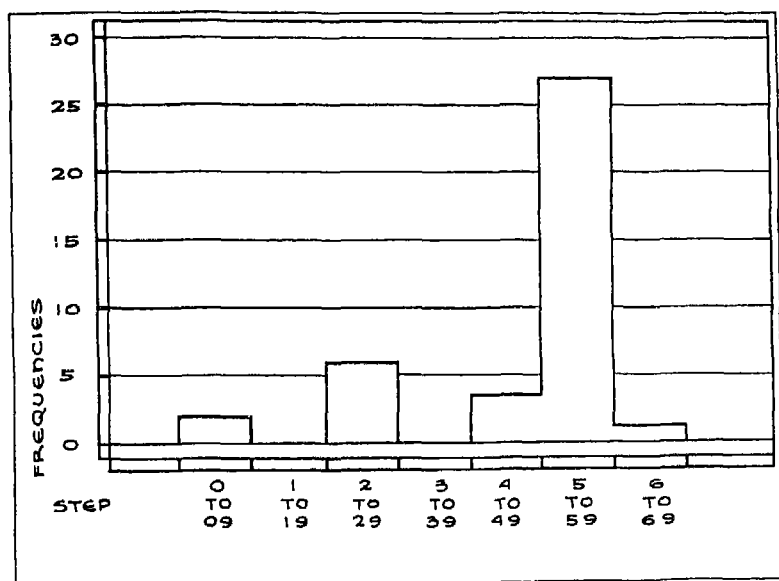


Figure 11 Attitude Toward Social Conformity, Situation III

Situation I is concerned with a formality of social intercourse. The spread of scores extends from step 6 to step 7.

Situation III relates to behavior in the use of cosmetics. The subjects favor conformity but not to the extent they do in Situation II.

Attitude Toward Taking Responsibility for an Obligation Voluntarily Assumed

The three situations comprising this scale are similar in that they depict a voluntary assumption of a responsibility by the adolescent and raise the question as to whether the adolescent should be held to his obligation. While the obligations are different, the general conditions are similar and the three situations may be combined into one scale.

The scores of thirty-nine subjects on the three situations are as follows:

Mean	2.9
Standard deviation	1.3

The data are presented graphically in Figure 12.

As these data indicate, this group of subjects is rather favorable toward adolescents fulfilling obligations of the type considered here.

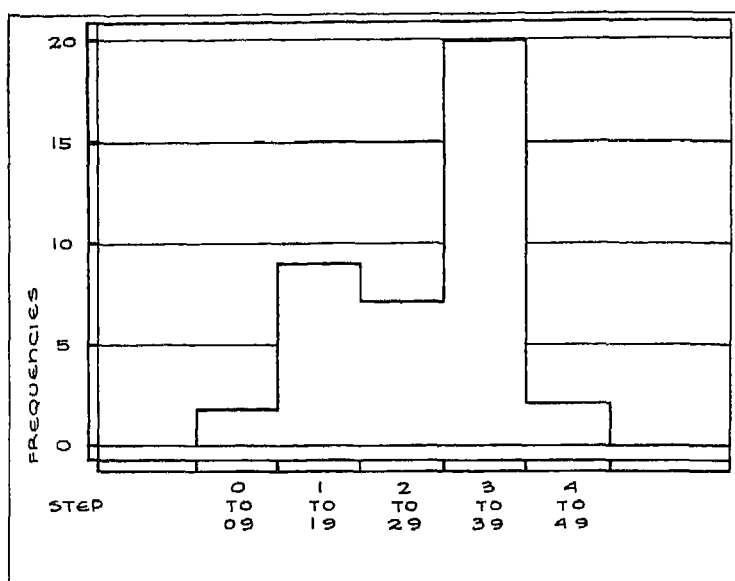


Figure 12 Attitude Toward Responsibility

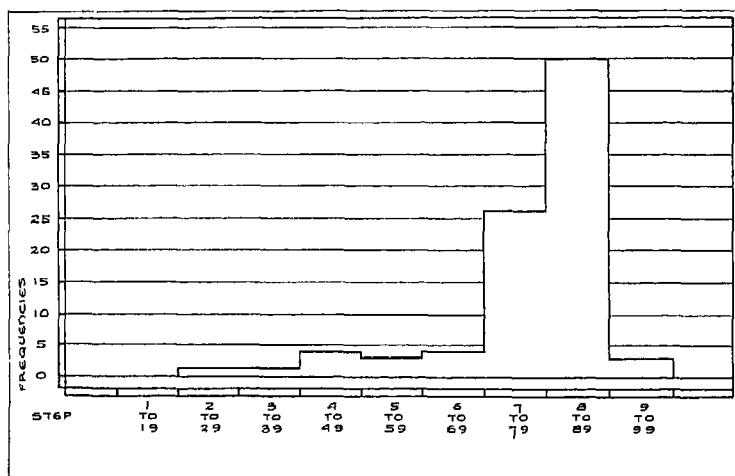


Figure 13 Attitude Toward Smoking by Adolescents

Attitude Toward Self-Reliance

The scores of the thirty-nine subjects on the Ojemann self-reliance attitude scale are shown graphically in Figure 13. The mean is 7.8 with standard deviation of 1.71.

Comparison of Attitudes of Untrained and Trained Subjects

One of the questions proposed at the outset of this study related to the differences in attitudes between subjects having an extensive background of training in child development and those relatively untrained in that field. The difference between trained and untrained groups has been used by Ojemann to study the needs of the learner. The theory underlying the use of the attitudes of trained subjects for this purpose is set forth in the monograph *Researches in Parent Education III*. It is, therefore, interesting to compare the attitudes of the parents as reported thus far in this chapter with the scores from a group of subjects highly trained in child development.

The time available for this study permitted the gathering of data from highly trained subjects for four of the scales. The number of trained subjects, their mean score, the range in scores, and the means and sigmas of the untrained group are presented in the following tabulation.

Scale	Number	Trained		Subjects	
		Range	Mean	Mean	Untrained Standard Dev of Scores
		Mixed Swimming			
Situation I	8	10 to 30	15	26	20
Situation II, III, IV	8	37 to 66	50	63	24
General statements	8	12 to 18	15	53	24
		Dancing			
Situation I	9	9 to 22	11	54	29
Situation II	9	76 to 94	81	77	19
Situation III	9	32 to 50	40	65	23
		Social Conformity			
Situation I	9	30 to 61	51	37	19
Situation II	9	10 to 60	39	23	17
Situation III	9	all 50	50	44	15
		Responsibility			
	9	15 to 30	20	29	13

All of the judges held either master's or doctor's degrees in child development and all but three in each group were actually assuming the responsibility for guiding adolescent children. Although the number of trained subjects should be increased, the data in the above tabulation reveal several interesting trends. The experts in child development are, on the average, more favorable toward mixed swimming parties especially of the type represented in the part of the test consisting of general statements. It will be recalled that the type of party considered in that section was one which was not especially chaperoned but which took place without extremes in dress, etc.

The experts are considerably more favorable toward dancing except where the activity takes place under such conditions as a public hall of what is usually called "undesirable reputation" (Situation II).

The highly trained subjects are not so concerned about requiring conformity to social customs. In this connection, Situation II presents some interesting data. Although the experts are on the average less favorable to conformity, 3.9 as compared to 2.3, the range of the experts' scores shows that there is considerable disagreement among them. The range extends over five scale steps, which is the widest range reported for any of the scales.

The trained group are somewhat more favorable to expecting the adolescent to take the responsibility for some obligations that he has voluntarily assumed.

SUMMARY AND FINDINGS

The aim of this investigation has been (1) to construct scales designed to measure the attitudes of parents toward seven aspects of adolescent behavior, (2) to measure the attitudes of untrained parents toward these behavior situations, and (3) to compare the attitudes of untrained parents with a small group of specialists in child development.

Scales were constructed to measure attitudes toward the following types of adolescent behavior: petting, dancing, attending mixed swimming parties, conforming to social customs, fulfilling assumed responsibility, and becoming self-reliant. An attempt was made to overcome one of the difficulties experienced with such scales as those of Thurstone which arises from the failure to define adequately the "key-concept." In the Thurstone scale, for example, such concepts as "religion" and "church" appear in the items comprising the scale designed to measure attitude toward the church but no provision is made for the variations in meaning of the concept "church." Churches may vary in type from conservative to liberal. In the scales used in the present study, two types of items were used: simple statements plus a definition of the key-concept and descriptions of reactions to situations, with the latter outlined in some detail.

These items were submitted to a group of judges who were asked to place each on an 11 point continuum varying from extremely favorable to extremely unfavorable. Point 1 on the scale was designated as the favorable end of the continuum and point 11 as the unfavorable extreme.

The mean of the values assigned by the judges was taken as the scale value of the item. The interquartile range was used as a measure of Q or ambiguity value. Statements with Q values above 3.5 were omitted from the scale in its final form.

The scales were administered individually or in small groups by the writer or by someone familiar with the administration of tests.

The important findings of this study are

1. It is possible to develop scale items that are essentially reactions to specific situations which have a relatively low Q value.

2. The attitude of the subjects varies with the type of situation, hence the method of employing only simple statements does not appear adequate to measure the attitudes of parents toward different aspects of behavior.

3. The responses of the parents to the different scales covered a wide range, they may be summed up as follows:

a. The scale for measuring attitude toward petting exists in two forms. Form I is composed of general statements plus a definition of the key-concept. Form II consists of a group of closely related situations. The mean of a group of 100 parents on Form I is 8.0 and the standard deviation of the scores is 2.3. The respective values for Form II are 7.8 and 1.5.

b. The eighty-three parents to whom the mixed swimming attitude scale was administered favored carefully planned parties which included responsible adults. They were less favorable toward unchaperoned parties and toward unchaperoned parties which included opportunity for considerable lolling around. The means of the scores are respectively 2.6, 5.3, and 6.3. The standard deviations of the scores are 2.0, 2.9, and 2.4.

c. The eighty-nine parents to whom the scale for measuring attitude toward dancing was administered were slightly favorable toward well-chaperoned private dances, (mean 5.4, standard deviation of scores 2.9), slightly unfavorable toward public dances in a good environment (mean 6.5, standard deviation of scores 2.3), and unfavorable toward public dances in places of "questionable" repute (mean 7.7, standard deviation of scores 1.9).

d. The thirty-nine parents whose attitudes toward conformity to social customs were investigated favored conformity. The means of the three situations were 3.7, 2.3, and 4.4. The corresponding standard deviations were 1.9, 1.7, and 1.5.

e. These subjects also favored holding adolescents responsible for obligations they had voluntarily assumed. The mean and standard deviation were respectively 2.9 and 1.3.

f. The attitude toward developing self-reliance was rather unfavorable as indicated by a mean score of 7.8 and a standard deviation of 1.7.

g. A small group of subjects, highly trained in child development, were more favorable than the untrained subjects to well-planned mixed swimming parties and more favorable toward dances taking place in a good environment. They were somewhat less favorable to conformity to social customs.

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PART SEVEN

A STUDY OF THE KNOWLEDGE AND ATTITUDES OF PARENTS OF PRESCHOOL CHILDREN

by

Louise C. Coast

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A STUDY OF THE KNOWLEDGE AND ATTITUDES OF PARENTS OF PRESCHOOL CHILDREN

THE PROBLEM

The purpose of this investigation is two-fold (1) to determine to what extent the generalizations involved in intelligent child guidance are functioning in the thinking of parents of preschool children, (2) to compare the attitudes of parents of preschool children with the optimum attitudes for child guidance (the term "optimum" will be defined later)

This study may be considered as contributing to an understanding of what may be called, after careful definition, the needs of parents. Here needs are defined as the difference between what is present and what is desired, the latter being determined by composite judgments of persons who have an extensive background of racial experience and who are engaged in the process of guiding children. The deficiencies in knowledge of important generalizations or the deviations in attitude will be referred to as needs.

Failure to make adequate determination of the needs of parents has led to uncertainty in the selection of materials for use in child study groups. Present programs in the field of parent education represent a wide variation in the assumption as to what is to be included.

Various methods for determining the needs of parents have been suggested. Tilson (16) studied 225 American-born children ranging in age from one to five years who had been referred to a habit clinic. The data concerning these children were analyzed to ascertain the relationship between various behavior problems and such factors as chronological age and mental age of the child and the education, occupation, religion, and nationality of the parents. The results were intended to show the needs of parents of preschool children and were to be used as a basis for parent education. Tilson did not, however, present a program showing how this information might be used as curricular material in parent education.

The results of such studies of children's problems merely reflect the needs of parents instead of constituting the needs themselves. Not the

problems but the underlying causes for such problems should form the basis for parent education

The attitudes and practices of parents furnish another possible method for discovering their needs. Laws (8) used four objective tests to study the attitudes and practices of parents concerning the social adjustment of children. The attitude test used in this investigation recorded a quick emotional reaction to stimulus words dealing with parent-child relationships. Laws assumed that such a test would furnish means for determining the content of a parent education course. The results of her investigation showed that the test dealing with practices of parents was decidedly limited in its use for parent study groups. The chief value was to aid individual parents in analyzing their own problems of adjustment. The sampling was not adequate and the tests were not sufficiently diagnostic to serve as a means for analyzing the needs of parents.

In an analysis of the fundamental problems involved in curriculum construction, Ojemann (12) considered the nature of the changes produced through learning and the source of knowledge as to desired changes. He concluded that such general categories as the "life activities" set forth by Bobbitt (3, p. 8-9) or the principles proposed by the Commission on the Reorganization of Secondary Education (7) are too inclusive to serve as satisfactory guides in describing changes produced through living. Activities classified under such headings as "citizenship" and "parental activities" emphasize overt characteristics of behavior. Bobbitt (3) emphasized abilities, and Charters (6, p. 11) activities. This emphasis appears to be satisfactory only with habitual acts essentially the same at each performance, since actions which involve more than a minimum of thinking vary from situation to situation. Ojemann (12) used a psychological analysis of learning changes.

Ackerley (1) expressed the needs of parents in psychological terms. This seems to be a desirable method since parents' practices and problems are symptoms rather than final results. A psychological analysis of such symptoms shows that certain attitudes, knowledge, emotional patterns, or skills are not functioning in parental behavior. This method also gives some suggestions of the type of learning experiences which tend to bring about the changes desired.

The procedure followed for determining the needs of parents of pre-school children is similar to the one used by Ackerley (1) and is based on the method developed by Ojemann (12). The method is as follows: Changes effected through learning are considered as being psychologi-

cal in nature. Overt behavior itself is considered as the result of the interaction of a complex of psychological factors, including knowledge of generalizations which may function in thinking, attitudes, emotional patterns, and skills. A determination of desirable outcomes is secured by competent judges.

In the realm of knowledge, persons are asked to record their judgment of the importance of a large number of generalizations. Tests are then constructed to measure the subject's ability to apply the important generalizations in representative situations. In the realm of attitude, attitude scales are submitted to judges who in turn record their attitudes. The composite judgment is taken as the optimum attitude. This is compared with the attitude of parents and the differences expressed as needs.

Ackerley's study (1) is concerned specifically with the generalizations and attitudes which function in the behavior of parents of elementary school children. This study is concerned with the knowledge and attitudes which function in the behavior of parents of preschool children. It may be considered as one in a series designed to furnish data which may be used in the construction of learning programs in parent education.

The generalizations selected for this study relate to the following phases of child development:

- 1 Physical
- 2 Mental
- 3 Motor

Importance scores based upon the judgments of twelve persons selected according to criteria described in the Ackerley (1) and Butler (5) studies are available at the Iowa Child Welfare Research Station. All generalizations receiving an importance score above 50 on a scale varying from zero to 100 were selected for study.

The attitudes tested in this investigation are those towards

- 1 Corporal punishment as a means of control
- 2 Thumbsucking
- 3 Preschool education
- 4 Praise as a means of control
- 5 Self-expression

Attitude scales constructed by Brandon (4) were used.

The plan of investigation involves the following procedures:

- 1 Constructing knowledge tests from the generalizations receiving high importance ratings by competent judges. Generalizations relating

to the fields of mental growth, physical growth, and motor development for the preschool child were selected

2 Measuring the attitudes and knowledge of parents of preschool children

3 Analyzing the knowledge and attitude test results

CONSTRUCTION OF TESTS

Knowledge tests were constructed for generalizations relating to physical growth, motor development, and intellectual development. The complete list of the generalizations, together with the important scores are on file in the Iowa Child Welfare Research Station, and are published in the monograph *Researches in Parent Education III* (10)

Knowledge Tests

The knowledge tests used in this study include the following types

- 1 Multiple choice
 - a With situations
 - b Without situations
- 2 True-false items

Multiple Choice Tests without Situations In the multiple choice tests without situations the items are not accompanied by a description of a specific situation. A general problem is proposed and the subject is asked to check one or more possible answers. An example of this type is the following

An average child doubles its weight in

- a 6 months
- b 4 months
- c 10 months
- d 12 months

Multiple Choice Type with Situations In the investigator's opinion this type is especially well adapted to measuring the extent to which generalizations are functioning in the thinking of parents. An interesting situation tends to direct the questioning away from the parent and his child. If the situations are well constructed they tend to be somewhat more closely related to the type of condition in which generalizations are used.

The first step in building these tests is to find situations which have a wide interest. Selections were made of situations which appear to be within the experience of or closely related to the experience of parents

The situations were stated briefly, specific names being used to add interest

For example, the situation dealing with imagination in the life of the child describes a five-year-old child who has a very vivid imagination. Fairies and other persons appear in her conversation and she has difficulty in distinguishing between them. She also has many imaginary companions. Her mother encourages her by reading numerous fairy tales to her. Other members of the family propose various methods of guiding the child. These methods are listed and the subjects are asked to select those methods which they consider as desirable in dealing with the situation. Another example is the case of Mrs. Jones' eleven-months-old Billy who is able to walk around and can reach up and turn on the jets of the gas stove. Several methods are listed which might be used to help solve such a problem. The methods are to be rated as good, fair, or poor.

True-False Type In the true-false type of item a provision was made for the parent to respond in an "I do not know" column to assist in decreasing the number of chance successes. The frequency of responses in this column as revealed in the analysis of the tests indicates that the possibility of chance success was reduced to some extent.

In developing the knowledge tests certain generalizations relating to the construction of tests were followed. They are

1 *Nature of knowledge* Knowledge testing consists essentially in setting up one or more situations which are new to the subject and which require the application or adaptation of a generalization or generalizations. Generalizations retain the common characteristics of a number of situations or ideas, and hence are the tools of thinking. An opportunity to apply the generalization relating to the influence of heredity as it is ordinarily defined upon physical development is offered in the following situation in which the subject is asked to pick out from a number of characteristics those which may be inherited.

Check the following traits or characteristics that may be inherited

- | | |
|----------------------|-------------------------------|
| a color of eyes | g tuberculosis |
| b good ear for music | h feeble-mindedness |
| c stealing | i telling lies |
| d curly hair | j quality of nervous system |
| e color blindness | k number of bones in the body |
| f fear of strangers | l honesty |

2 *Reliability of measuring devices* In order to be valid a test must be reliable. Reliability of tests may be improved by improving

individual items and by using more items. Several statistical measures are available for determining test reliability. These include repetition of the test after an interval of time, the correlation of chance halves of the test, and the correlation of scores from two different forms of the test.

3 *Validity of measuring devices.* An efficient measuring device must be a valid measure. That is, the device must measure what it purports to measure. Factors which contribute to invalidity in a measuring device are insufficient sampling of material or the inclusion of material which is insignificant or unessential. Invalidity may also arise when the tests are constructed in such a manner that decisions may be made on the basis of grammatical consistency or synonymous phrasing between the description of the situation or the body of the test and the detailed items.

In the present study only generalizations receiving a high importance score were included. An effort was also made to free the test from spurious leads such as the synonymous phrasing mentioned above. Furthermore, the items were checked by eight judges to remove difficulties in interpretation arising from such factors as ambiguity in meaning.

4 *Objectivity of measuring devices.* Objectivity refers to the degree to which the same performance is rated alike by different individuals. A definite scoring key was prepared for all the items in the knowledge test, thus securing uniformity in scoring.

Attitude Tests

The attitude tests used in this study were constructed by Brandon (4). Her method adopts the common psychological principle that equally often noticed differences are psychologically equal. The scale values of the individual test items are determined by the judgments of a large group of persons. Brandon attempted, however, to overcome two difficulties frequently met with in measuring attitudes. The first of these is the definition of the key-concept. Investigators such as Thurstone (15) use the simple statement form and allow the subject taking the test to give any meaning to the key-concept that he chooses. Brandon, however, defines the key-concept. For example, in the scale measuring attitude toward preschool education the following description appears at the top of the scale: "Preschool education as used in this scale has reference to training received in preschools or nursery schools which have recognized educational programs for children be-

tween the ages of eighteen months and five years" Brandon also attempted to overcome the difficulties caused by mere verbalization by introducing items other than simple statements. The test measuring attitude toward self-expression, for example, includes the description of a rather definite situation and several attitudes that may be expressed toward it.

The attitudes of parents toward corporal punishment as a means of control, toward eliminating the habit of thumbsucking, toward preschool education, toward praise as a means of control, and toward self-expression in children were tested. An analysis of the attitudes of parents of preschool children toward the development of self-reliance had already been made by Ojemann (11).

The Q values and the scale values of the tests used in this study are reported by Brandon (p. 27).

PERSONNEL OF SUBJECTS AND ADMINISTRATION OF TESTS

Personnel of Subjects

A total of 166 parents of preschool children were used as subjects in this investigation. This group included 124 mothers and 42 fathers. The subjects were obtained from cities in Iowa (Iowa City, Sioux City, Spencer, and Fort Dodge), and from Sioux Falls, South Dakota. If parents were obtained from study groups, the data were obtained before the beginning of the study program. Most of the subjects were obtained, however, not through study groups, but through direct contact by the investigator.

Education. The subjects were classified according to the grade finished in formal school. The tabulation is as follows:

Education	Subjects	Percentage
Grade 8 or below	5	3.0
High school		
Year 1	3	1.8
Year 2	9	5.4
Year 3	6	3.2
Year 4	24	14.5
College		
Year 1	11	6.9
Year 2	16	9.6
Year 3	15	9.0
Year 4	40	24.1
Year 5 or more	37	22.3

From the above tabulation it will be seen that between one-fourth and one-fifth of the group had a partial or complete high school educa-

tion, and approximately the same number had extended their education beyond four years of college. As measured by their formal school education, the group represents the upper levels rather than the lower levels.

Size of Family The number of children in the family represented a range from one to seven. The tabulations are as follows:

1	52	31.3
2	62	37.3
3	29	17.4
4	12	7.8
5	5	3.0
6	5	3.0
7	1	0.6

Age of Children All of the families had at least one child of pre-school age.

Administration of Tests

The contact of the parents was made through a brief interview by the investigator. In a few cases the subjects were approached by one of the field workers in parent education. The nature of the tests was briefly explained, and when the co-operation of the parent had been obtained the method of taking the tests was briefly explained to insure an understanding of the directions by the subject. The tests were then filled out by the subjects.

RESULTS

Test responses were secured from 166 subjects. The knowledge tests were scored according to the key established by the responses of a group of eight judges. If the subject's response agreed with that of the judges it was marked +, if it disagreed it was marked 0. An analysis of the responses of the parents was made item by item. This method was selected in order to show the extent to which specific generalizations are functioning in the thinking of the subjects.

The scale values of the statements endorsed by the parents on the attitude tests were averaged for each subject. A frequency distribution for the individual scores was tabulated. The mean and distribution of the responses of the subjects were then compared with the responses of the judges.

An analysis of parental attitudes will be presented first, this will be followed by an analysis of responses on the knowledge tests.

Analysis of Responses on Attitude Tests

In all of the attitude tests Step 1 represents the favorable side of the scale, and Step 11 the unfavorable side

The data on corporal punishment are represented in the following tabulation and graphically in Figure 1

	Score
Parents' median	4.37
Judges' median	8.00
Parents' mean	3.02
Distribution	1.01
Mean	.083

The median score of the parents toward corporal punishment is 4.37. The range extends over almost the entire scale. The comparison of the median of the judges with the median of the subjects in this investigation is interesting. The difference is almost four scale steps in the direction of the side favorable to corporal punishment as a means of control. Parents are far more favorable to corporal punishment than persons having an extended background in child development.

The data on the attitude toward preschool education are represented

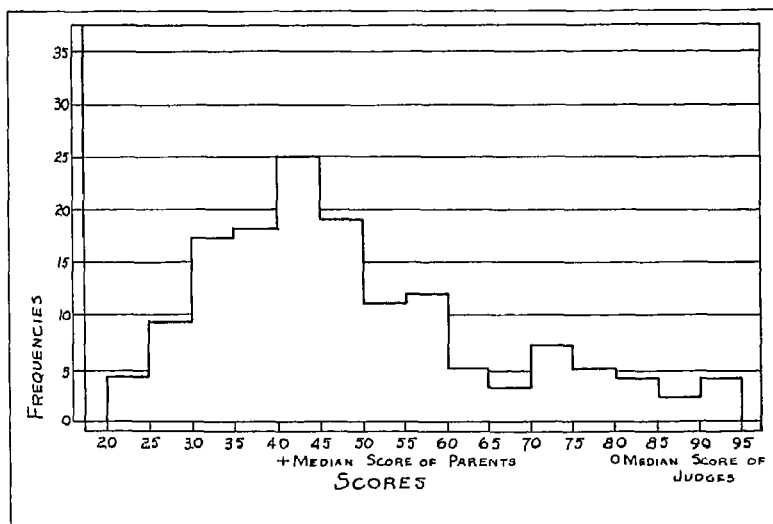


Figure 1. Parents' Attitude Toward Corporal Punishment as a Means of Control

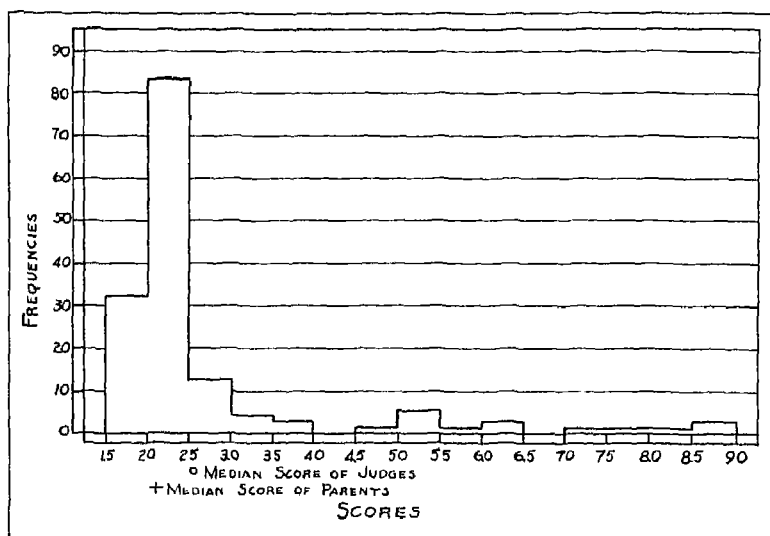


Figure 2 Parents' Attitude Toward Preschool Education

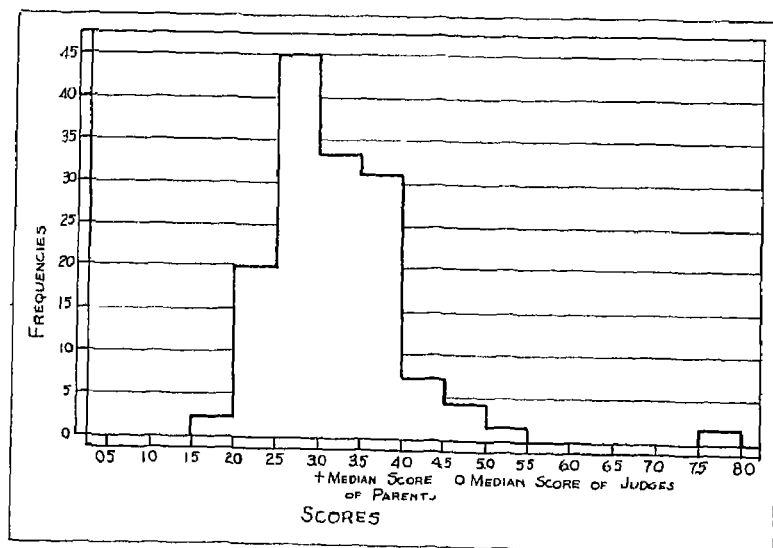


Figure 3 Parents' Attitude Toward Praise as a Means of Control

below and graphically in Figure 2. This distribution is very consid-

	Score
Parents' median	2.25
Judges' median	2.55
Parents' mean	2.62
Distribution	1.35
Mean	1.12

ably skewed toward the favorable end of the scale. A few of the group fall on the unfavorable side, but the vast majority are on the other side. There is practically no difference between the median of the subjects used in this investigation and that of the judges.

The following tabulation presents the data on the attitude toward praise as a means of control. Figure 3 presents this material graphically.

	Score
Parents' median	3.08
Judges' median	4.80
Parents' mean	3.11
Distribution	.84
Mean	.07

On the average the subjects are more favorable to the use of praise than are the judges. The difference in the medians is 1.7 scale steps. The vast majority of the group of subjects fall outside the scale interval in which the judges' median falls.

The difference between the medians in the attitude toward self-expression is one scale step. The parents are on the average more favor-

	Score
Parents' median	4.06
Judges' median	3.08
Parents' mean	4.28
Distribution	1.01
Mean	.08

able toward self-expression than are the judges. Individual scores, however, covered a wide range on the scale. These data are presented graphically in Figure 4.

The opinion of the parents toward eliminating the habit of thumb-sucking was more toward the favorable end of the scale than was that of the judges.

	Score
Parents' median	2.42
Judges' median	3.66
Parents' mean	3.02
Distribution	1.04
Mean	.08

The difference in the medians is 1.2 scale steps. This suggests that parents are somewhat more concerned in eliminating the habit of thumbsucking than are the judges. These data are presented graphically in Figure 5.

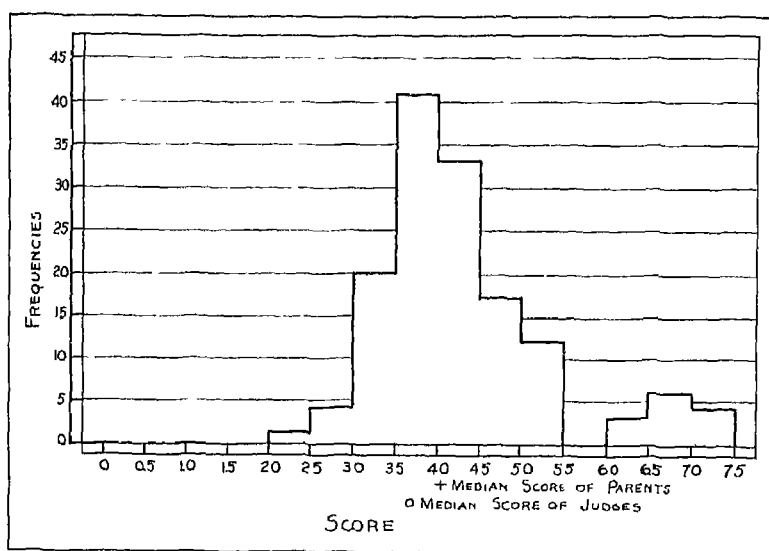


Figure 4 Parents' Attitude Toward Self-Expression

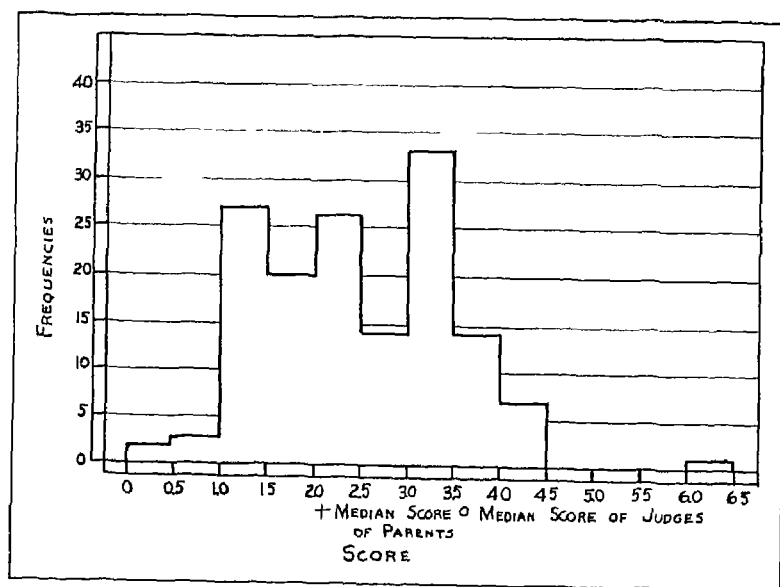


Figure 5 Parents' Attitude Toward Eliminating the Habit of Thumbsucking

CRITERIA FOR GOOD MEASURING DEVICES

The responses of the subjects on the knowledge tests will be used first to give some indication as to how well these tests fulfill the important criteria of good measuring devices. The criteria discussed are validity, reliability, objectivity, and ease of administration of scoring.

Validity How valid are the knowledge tests as a measure of parents' knowledge of significant generalizations relating to child development? Since the items were based on generalizations rated as highly important for the intelligent guidance of children by a group of judges, insignificant and unessential generalizations were excluded. The use of expert judgment is assumed in this study to contribute to validation since validity depends on the inclusion of significant and essential generalizations.

Another method of validation is the comparison of the percentages of approved responses at different levels of ability. This method may be applied in this study by comparing the parents' responses to the approved responses. The scoring key itself represents the consensus of the responses of a highly trained group.

The validity of the attitude tests has been assumed in this study. Investigations and discussions of the question are found in a paper by Ojemann (11) and by Ackerley (1).

The following factors which tend to favor the validity of the knowledge tests may be summarized: the method used for selecting the generalizations, the agreement of the subjects to the approved responses of each item, and the attempt to eliminate factors which relate to unreliability in testing.

Reliability The next criterion to be considered is that of reliability. The reliability coefficient was determined by correlating chance halves of the test and applying the Spearman-Brown formula. This correlation, based on the data from 166 subjects, is .61. This correlation is considerably lower than that obtained in other similar studies, such as those of Ackerley (1) and Butler (5), and indicates that the knowledge test should be improved.

Other Criteria. The key of approved responses which was obtained by consensus of judgments eliminated as far as possible subjective

factors in scoring the tests. The tests can be easily administered since they require only checking and no further writing.

Analysis of Responses on Knowledge Tests

The average number of parents giving the approved responses to the true-false items which constitute Part I of the knowledge test is 77.5 per cent. The average number of parents giving the approved response on each question of Part II of the knowledge test, which consists of the multiple choice type of items, was 71.5 per cent.

An analysis of the responses of the subjects to various groups of items is given in the following paragraphs.

Physical Development. The first twelve items in Part I of the knowledge test relate to physical development. The percentage of correct responses on each item is as follows:

Item	Percentage
1	88.0
2	88.6
3	84.9
4	86.1
5	84.9
6	62.0
7	73.5
8	30.1
9	88.6
10	92.8
11	69.9
12	86.1

It is interesting to note that only 86 per cent of the subjects gave the approved response to the fourth item relating to prenatal influences. From 85 to 88 per cent of the subjects have the approved responses to the first three items relating to the influence of hereditary factors. Item 2, for example, reads: "If your husband is a doctor your son is certain to be a better doctor than any other type of professional or business man." Three-fourths of the parents recognized that a nine-month-old baby requires more space than a small pen to move around in, in order to stimulate his development.

Some indication of the failure of parents to recognize individual variations and variations from day to day in the requirements of children, such as sleep, for optimum physical development is shown by response to item 8. Seventy per cent of the parents approved the practice of requiring all children to stay in bed a given number of hours each night even though they do not sleep.

Exercise is important in the development of muscle and motor control. The child needs space in which to move around and adequate equipment for the development of his muscles and motor control. The following tabulation shows, as measured by the tests, that only 73.5 per cent of the parents recognized the necessity of space for the child, and 82.4 per cent of the parents recognized the type of equipment which would further muscular development.

Item	Percentage
7	73.5
Part II	
2a	57.8
2b	83.7
2c	72.3
2d	78.9
2e	79.5
2f	63.8
2g	67.5
6a	65.7
6b	60.8
6c	97.6
6d	87.3
6e	90.4
6f	84.9
6g	97.0
7a	59.6
7b	53.7
7c	47.0
7d	69.9
7e	55.4
7f	38.6

The prediction of hereditary traits is uncertain as any number of combinations may be made from the two sets of genes. A few physical traits, such as color of hair and eyes, tend to follow the general laws of inheritance. The object in asking parents a question on heredity was to see if they could distinguish between traits or characteristics which tend to follow the general rule of inheritance and such characteristics as stealing, honesty, fear of strangers, and telling lies. Only 73.7 per cent of the parents realized that such characteristics were not inherited. The following tabulation shows the percentage of parents marking the items correctly.

Item	Percentage
Part II	
1a	83.1
1b	60.2
1c	89.2
1d	79.5
1e	36.1

1f	88 0
1g	69 3
1h	77 1
1i	89 2
1j	65 7
1k	53 0
1l	91 0

In the generalization pertaining to the physical development of the newborn child, its average size, weight, and development of certain parts of the body, only 89 7 per cent of the mothers and fathers knew that an average baby doubles its weight in the first six months. The parents' responses were from four to twelve months.

Item	Percentage
Part II	
4a	70 5
4b	95 2
4c	96 4
4d	97 0

In the generalization pertaining to height-weight-age of the average child, the parents were to realize the importance of interpreting the height-weight-age tables. Eighty-three per cent of the parents realized that the figures did not necessarily mean that all children at a certain age should weigh the exact number of pounds given but may deviate from that amount.

Item	Percentage
Part II	
5a	98 2
5b	82 5

Teeth are a special bone development and need the same minerals and vitamins as do other bones for proper development. When teeth start to erupt, something hard to bite on, such as zwieback or dry toast, may be given. The subjects were also asked to check the items that were most helpful in aiding the growth and formation of the teeth. The following tabulation gives the percentage of correct responses for item 9.

Item	Percentage
Part II	
9a	77 7
9b	80 1
9c	89 2
9d	98 8
9e	74 1
9f	73 5
9g	59 0
9h	100 0
9i	75 3
9j	65 7

In question ten, 45 per cent of the parents wanted to give the child a celluloid bracelet to relieve the pain in cutting teeth. Celluloid bracelets may come apart and may break. The average number of correct responses to this item was 76.9 per cent. Following is the tabulation for this question

Item	Percentage
Part II	
10a	84.3
10b	98.2
10c	74.1
10d	55.4
10e	72.9

It is interesting to note with what success the parents checked the items in sex education. The questions were answered with a certain degree of success by all parents, with the exception of item 4. The parents did not agree with the judges as to the terms relating to parts and functions of the body that a school-age child should have in his vocabulary. The average number of correct responses to the other items was 89.5 per cent.

The following tabulation shows the correct responses of the parents to questions related to sex education

Item	Percentage
Part I	
11	69.9
Part II	
12a	77.7
12b	97.0
12c	86.1
12d	100.0
12e	91.6
13a	91.6
13b	68.7
13c	98.2
13d	89.2
13e	91.6
14a	98.2
14b	99.4
14c	88.6
14d	82.5
15a	57.2
15b	39.8
15c	59.0
15d	62.0
15e	63.8
15f	48.2
15g	42.8

Mental Development The items 13 to 20 on Part I of the knowledge test relate to mental development. The percentages of correct responses are given below

Item	Percentage
13	95.2
14	68.7
15	78.3
16	82.2
17	86.1
18	84.9
19	69.9

At birth the normal infant is capable of performing many movements, and perfecting movements. This capacity for learning makes possible complex development. The following tabulation shows the correct responses on the items in this test.

Item	Percentage
Part II	
34a	54.8
34b	38.6
34c	74.7
34d	46.4
34e	100.0
34f	90.4
34g	93.4
34h	96.4

In test item 17, Part II, 73.5 per cent of the parents recognized the fact that infants learned from birth. Other answers varied from one to twelve months of age.

In test item 18, Part II, only 68.9 per cent of the parents thought that infants six months of age responded to differences in tones, light, and facial expression.

The generalization on intelligence tests included the precaution in giving intelligence examinations that results be accepted only from trained examiners, and that the interpretation of results be made carefully. Only 78.3 per cent of the parents recognized the fact that results of an intelligence examination should be accepted from trained examiners only. The percentage of correct responses is as follows:

Item	Percentage
Part II	
22a	83.1
22b	56.6
22c	57.8
22d	71.7
22e	19.9

The next question, number 23, concerns the situation of a child who appears very dull in school, but appears well physically. Only 59

per cent of the parents advised having his IQ taken. Other responses were as follows:

Item	Percentage
Part II	
23a	88.0
23b	86.7
23c	84.3
23d	59.0
23e	99.4
23f	96.4

An analysis of the responses to test item 24 reveals a failure on the part of some parents to interpret intelligence test results. The following tabulation shows that only 21.1 per cent of the parents answered this item in the same way as the judges.

Item	Percentage
Part II	
24a	54.8
24b	80.7
24c	98.8
24d	95.8
24e	21.1
24f	96.4

There is some indication of failure on the part of parents to understand the possibilities of development in a four-year-old child. Only 23.5 per cent of the parents marked item 25b, "find opportunities to play with children." Only 71.1 per cent of the parents checked item 25d, "play creatively alone as well as with other children."

Item	Percentage
Part II	
25a	84.9
25b	23.5
25c	86.7
25d	71.1

Intelligence is one factor in social and emotional development. Under ordinary conditions children may be guided in their development by parents and teachers. Parents did not agree with the judges as to what extent a three-year-old child could be guided in his social and emotional development. The following tabulation shows the distribution of correct responses.

Item	Percentage
Part II	
26a	63.8
26b	59.6
26c	92.2
26d	60.2
26e	92.2
26f	91.6
26g	85.5
26h	53.0

Attention is a fundamental factor in intellectual development. It may vary in type and intensity. Suggestions were given to the parents for securing the child's attention. Only 69.3 per cent of the parents agreed that to secure the attention of a child the number of possible distracting objects should be limited. Only 63.8 per cent of the parents checked the item stating that the child must understand what is wanted of him, or what is being said to him.

Item	Percentage
Part I	
19	83.6
Part II	
27a	98.2
27b	87.7
27c	69.3
27d	99.4
27e	63.8
27f	94.0

The imagination of children may be so directed that it becomes influential in directing activity without over-shadowing reality. There were 81.5 per cent of the parents marking items on this question correctly.

Item	Percentage
Part II	
28a	97.6
28b	100.0
28c	97.6
28d	81.3
28e	31.9
28f	80.7

There were 79.6 per cent of the parents responding correctly to various procedures which were proposed for a situation concerned with a six-year-old child who was always asking questions.

Item	Percentage
Part II	
32a	99.4
32b	84.9
32c	48.8
32d	89.8
32e	99.4
32f	38.6
32g	71.1

Motor Development. Items 20 through 25 on Part I of the knowledge test relate to motor development. The percentage of correct responses are tabulated below.

Item	Percentage
20	88.6
21	87.3
22	88.0
23	27.7
24	51.2
25	86.1

It is interesting to note that only 72 per cent of the parents made approved responses to items in this section. The following analysis shows with what degree of success the items were marked correctly.

A newborn baby is able to execute a variety of movements, such as turning the head, moving his arms and legs, clinging to a rod, and others. They foreshadow his developing motor control. An analysis of the following tabulation suggests a failure on the part of parents to recognize movements which a newborn baby is capable of making.

Item	Percentage
	Part II
34a	54.8
34b	38.6
34c	74.7
34d	46.4
34e	100.0
34f	90.4
34g	93.4
34h	96.4

Handedness may be established by the end of the first year, although great individual variability exists in this respect. The parents were given a situation relating to handedness of an eighteen-month-old child. An analysis of the responses suggests in this situation that parents have a tendency to be persistent in their efforts to make a child use his right hand even though the tendency to use the left hand is stronger. The responses to the given situation were to be marked as good, fair, or poor procedures for the mother to follow.

Item	Percentage
	Part II
35a	61.4
35b	74.7
35c	77.1
35d	68.7

Parents did not agree with the judges as to good, fair, and poor procedures to be followed in the home which might encourage children to write.

Item	Percentage
	Part II
31a	60.2
31b	70.5
31c	64.4
31d	66.3
31e	81.9

SUMMARY

The aim of this investigation has been to determine to what extent the generalizations involved in intelligent child guidance are functioning in the thinking of parents of preschool children, to compare the attitudes of parents of preschool children with the optimum attitudes for child guidance, and to determine the effectiveness of a specially prepared learning program in developing an understanding of the generalizations in the field of mental growth of the preschool child

This study is concerned particularly with generalizations which should be functioning in the thinking of parents of preschool children, and then growth in attitudes. For studying knowledge of generalizations, test items, largely of the multiple choice type, were constructed from generalizations rated as important by competent judges in the field of child development. The test items were submitted to a highly trained group of eight judges, and from these responses the scoring key was developed.

Attitude tests constructed by Brandon (4) were used to ascertain what attitudes toward corporal punishment, preschool education, eliminating the habit of thumbsucking, praise as a means of control, and self-expression were functioning in the thinking of parents of preschool children.

These tests were administered to 166 parents of preschool children and the results analyzed item by item.

An analysis of the data reveals the following

1 The mean per cent of approved responses on the knowledge test, Part I, was 77.5, on Part II, 76.5. Individual responses on the test covered a wide range, extending from 19 per cent to 100 per cent of the approved responses.

2 The responses of the parents on the attitude tests covered a comparatively wide range. The parents' medians were compared with the judges' medians. The greatest difference was found between the parents' attitude and the judges' attitude toward corporal punishment as a means of control. The parents' median was approximately four scale steps beyond the judges' median and in the direction of the favorable end of the scale. This suggests that parents are still rather favorable toward the use of corporal punishment. The parents' median and the judges' median agreed within 3 of a scale point in their attitudes toward preschool education. Parents were slightly more favorable than the judges in the attitude tests toward praise as a means of control and toward self-expression. The parents were more in favor of eliminating the habit of thumbsucking in children than were the judges.

3 An analysis of the data indicated that a significant number of parents did not recognize the implications of the generalizations as applied in the tests.

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